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A REVISION OF THE SUBFAMILY PACHYGRONTHINÆ OF THE WORLD (HEMIPTERA: LYGÆIDÆ)

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FOUR PLATES AND FIVE TEXT FIGURES

The subfamily Pachygronthinæ is one of the smaller units present within the vast and heterogeneous family Lygæidæ and therefore is rather admirably suited for study from a world viewpoint, in that the student is less likely to become involved in an unwieldy mass of species while still being able to retain the broad geographic coverage so valuable in evaluating specific and higher group relationships. It is largely for these reasons that the study of this small aggregate has been undertaken. The present paper attempts to treat the members of this subfamily from a world-wide viewpoint. Anyone who has endeavored to study a world fauna inevitably is faced with inadequacies in material, lack of comprehensive collecting possibilities and sometimes baffling problems in interpretation. The present work is no exception. I shall be satisfied if some substantial contribution has been made to our knowledge of these insects and if a basis has been established from which more detailed subsequent work can proceed.

The advantages of a world approach are many, chief among them is the ability to see generic and specific relationships as they occur over the entire range of the taxonomic group rather than from a limited geographic area. Thus it is hoped the definition of categories that are applicable only to a particular region can be avoided in large measure.

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History.—The members of the subfamily Pachygronthinæ have never been the subject of a special study. The great majority of the species have been described piecemeal by various authorities on the Hemiptera chiefly in the course of faunal studies, the results of expeditions or in the course of more detailed studies on related groups. Up to the time of Stål only eight species and three genera had been described and these were scattered from Madagascar, South Africa, and New Caledonia to North America and Southeastern Europe. In 1870 Stål described and keyed a number of species from the rich Philippine fauna in the course of working over the material collected in the islands by the Semper expedition. In 1874 appeared the Lygæid portion of Stål's monumental "Enumeratio Hemipterorum" in which all the species known to that time were treated more or less thoroughly, a number of new forms described and partial keys given. As is usual with his work, Stål's species were generally well founded and to him is due the credit for establishing the major generic and tribal characters and many of the characters subsequently adopted by workers for the discrimination of species. Since the appearance of the "Enumeratio" the greater part of the work on the group has dealt with the description of isolated species, or partial compilations on limited geographic areas such as Distant's work in the "Fauna of British India," the Torre Bueno "Synopsis" and Barber's treatment of the West Indian fauna. This scattered work has resulted in a somewhat heterogeneous complex of species, many of them difficult to interpret and others apparently unrecognized since their original description. The need for bringing this scattered material together is therefore obvious and it was partially with this in mind that the present study was undertaken.

Materials and methods.—Because the group is essentially tropical and subtropical in distribution and little personal collecting has been possible, a special attempt has been made to bring together as much of the material represented in the world's major museums and other collections as possible. The largest single collection is present in the United States National Museum; this institution is especially rich in material from the Philippines collected by C. F. Baker and has a good representation from the Western Hemisphere. The Stockholm Museum possesses the invaluable Stål types and the author is under great obligation to the authorities of this institution for the oppor-

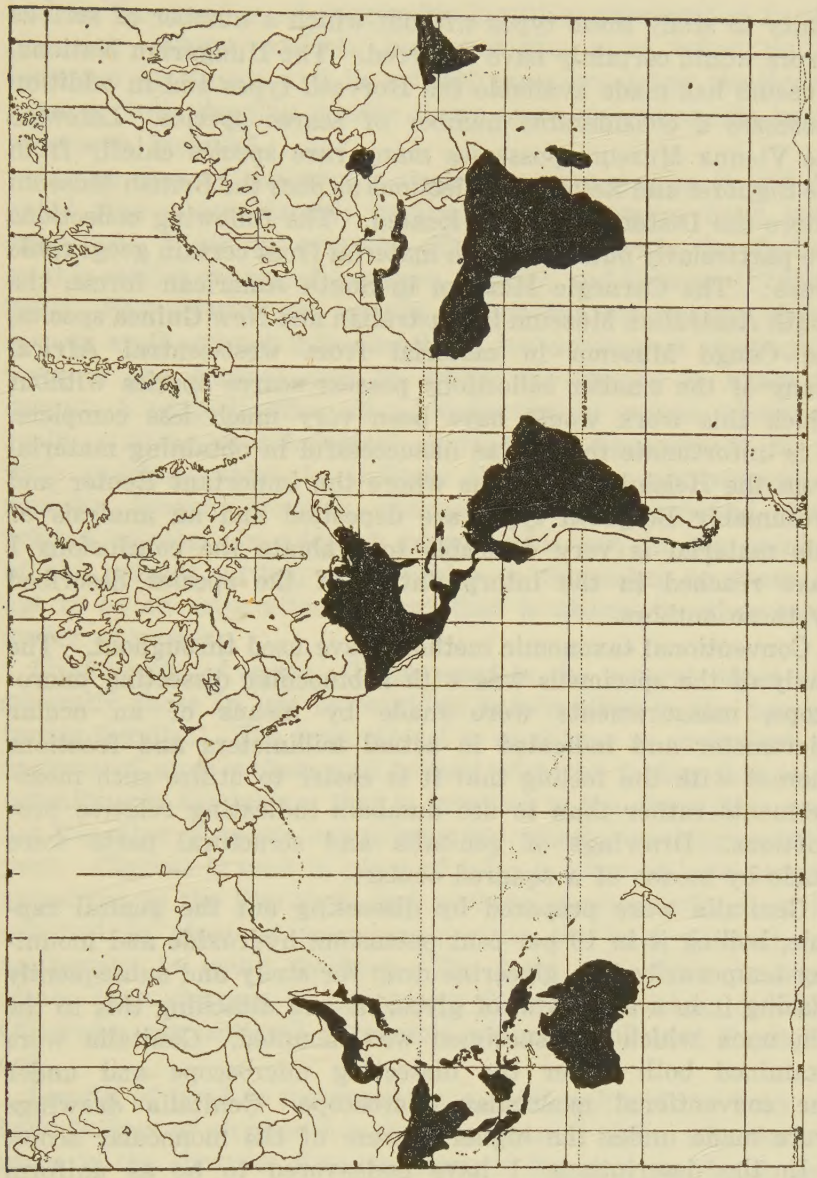

FIG. 1. World Distribution of subfamily Pachygronthinæ

tunity to study these types without which a number of serious errors would certainly have occurred. The Hungarian National Museum has made available the Horvath types and in addition possesses a considerable number of scarce species. Likewise the Vienna Museum possesses many rare species chiefly from the Signoret and Reimoser collections as does the British Museum where the Distant types are located. The following collections are particularly outstanding in material from certain geographic areas: The Carnegie Museum in South American forms, the South Australian Museum in Australian and New Guinea species, the Congo Museum in material from west-central Africa. Many of the smaller collections possess scarce species without which this work would have been very much less complete. It is unfortunate that I was unsuccessful in obtaining material from the Helsinki collections where the important Reuter and presumably Bergroth types are deposited and an analysis of this material is very desirable to evaluate the conclusions I have reached in the interpretation of the species described by these authors.

Conventional taxonomic methods have used throughout. The study of the specimens was with a binocular dissecting microscope, measurements were made by means of an ocular micrometer and indicated in actual millimeters and fractions thereof with the feeling that it is easier to utilize such measurements rather than to use numbers indicating relative proportions. Drawings of genitalia and structural parts were made by means of a squared ocular.

Genitalia were prepared by dissecting out the genital capsule, boiling it in 10 per cent potassium hydroxide and mounting temporarily in a glycerine drop for study and subsequently placing it in a small vial of glycerine and attaching this to the pin upon which the specimen was mounted. Genitalia were examined both under the dissecting microscope and under the conventional monocular microscope. Genitalia drawings were made under the higher powers of the monocular scope.

In the descriptions, I have endeavored to be as uniform as possible and have attempted to re-describe the previously described species with as great care as in the case of newly described species. Measurements considered valuable have been indicated first by the average figure and then in parentheses are given the extremes of the range. These range vary in reliability depending upon the number of specimens included

and in the number of geographic localities represented in the material. Where possible, measurements were taken on at least ten specimens and in critical cases involving closely related or wide ranging species many more measurements were, of course, included.

In the case of the names applied to new species it will be noted that a considerable number of patronymics have been employed. I am in essential disagreement with the feeling on this matter expressed by Mayr, Linsley, and Usinger [(1953) 254]. Patronymics are usually euphoneous, moderately short, easy to spell and not infrequently as indicative as a geographic term of the general area in which the species is likely to occur. A name is after all a handle and in groups where no really striking morphological character is apparent it is of little practical value to indicate that species are somewhat rounder, longer, browner, shorter or more roughened than related species. In addition patronymics are, in the opinion of the present writer, often easier to remember as there is apt to be an association present that is absent in other categories of names.

Explanation of terms.—Terms used in the present paper are generally those in use by working taxonomists in the hemipterous families. The term *labium* is used here as equivalent to *rostrum* of most writers and is used with the feeling that it is actually only the labium that is involved in the description and not the other elements comprising the piercing-sucking mouthpart. *Clypeus* is used in place of *tylus* in view of both usages appearing in the literature, but perhaps inconsistently *juga* is retained in place of *paraclypeus* since the later is perhaps ambiguous to many workers. The term *gonostylus* is used rather than claspers or parameres following Bonhag (1953). Otherwise conventional taxonomic usage is followed throughout.

Length of head is measured on a median line from base of head to apex of clypeus in a single horizontal plane; interocular space is the shortest distance between the eyes on the dorsal surface; width of pronotum is the greatest width, or that across the humeral (sub-basal) region; length of pronotum is measured along the median line; total length is a single dorsal measurement along the mid-line. Distance apex clavus-apex corium is a straight line measurement along the longitudinal axis of the body from apex of the clavus to the apex of the corium.

A complete bibliographic history is attempted for each species, although I am aware that some faunistic records have probably been overlooked. In the case of higher group names some selectivity has been used. It has sometimes been necessary to follow the citation of a specific name blindly even though the record might belong to a different species. However, where possible, previous errors of determination have been corrected or an indication given as to the questionable nature of the record.

References are included in the "Literature Cited" section only when the reference is not in the synonymy of the species or genus under discussion.

The term subspecies as used in the present paper is intended in the geographic sense, although material has seldom been adequate to actually show detailed ranges and intergrading areas. Thus subspecies are to a large extent actually the arbitrary opinion of the author based upon what he considers to be the most logical nomenclatoral status to apply to the specimens under consideration.

Systematic arrangement:

Subfamily PACHYGRONTHINÆ Stål

Tribe PACHYGRONTHINI Stål

Genus PACHYGRONTHA Germar

1. *P. compacta* Distant
2. *P. parvula* Barber
3. *P. œdancalodes œdancalodes* Stål
4. *P. œdancalodes carvalhoi* subsp. nov.
5. *P. longiceps* Stål
6. *P. barberi* sp. nov.
7. *P. grossa* sp. nov.
8. *P. minarum* Lethierry and Severin
9. *P. saileri* sp. nov.
10. *P. nigrovittata* Stål
11. *P. lestoni* sp. nov.
12. *P. austrina* Kirkaldy
13. *P. bakeri bakeri* sp. nov.
14. *P. bakeri gracilis* subsp. nov.
15. *P. harrisi* sp. nov.
16. *P. vidua* Horvath
17. *P. carinata* sp. nov.
18. *P. semperi* Stål
19. *P. miriformis* Breddin
20. *P. longicornis* Stål
21. *P. bipunctata bipunctata* Stål
22. *P. bipunctata incipiens* subsp. nov.

23. *P. congœnsis* sp. nov.
24. *P. quadripunctata* (Signoret)
25. *P. africana* sp. nov.
26. *P. robusta* sp. nov.
27. *P. lurida lurida* sp. nov.
28. *P. lurida yakuensis* subsp. nov.
29. *P. angusta* Stål
30. *P. lineata* Germar
31. *P. pseudolineata* sp. nov.
32. *P. paralineata* sp. nov.
33. *P. antennata antennata* (Uhler)
34. *P. antennata nigriventris* Reuter
35. *P. similis* Uhler
36. *P. lewisi* Distant
37. *P. walkeri* Distant
38. *P. angularis* Reuter
39. *P. solieri* (Montrouzier)

Genus ŒDANCALA Amyot and Serville

40. *O. dorsalis* (Say)
41. *O. crassimana* (Fabricius)
42. *O. meridionalis* Stål
43. *O. mexicana* sp. nov.
44. *O. cubana* Stål
45. *O. kormilevi* sp. nov.
46. *O. bimaculata* Distant
47. *O. longirostris* sp. nov.
48. *O. nana* sp. nov.
49. *O. husseyi* sp. nov.
50. *O. notata* Stål

Genus MAGNINUS Distant

51. *M. typicus* Distant

Genus UTTARIS Stål

52. *U. pallidipennis* (Stål)

Tribe TERACRINI Stål

Genus STENOPHYELLA Horvath

53. *S. macreta* Horvath
54. *S. malkini* sp. nov.

Genus TERACRIUS Stål

55. *T. namaquensis* Stål

Genus PHLEGYAS Stål

56. *P. abbreviatus* (Uhler)
57. *P. annulicrus* Stål
58. *P. patruelis* Berg

Genus PACHYPHLEGYAS novum

59. *P. modigliani modigliani* (Lethierry)
60. *P. modigliani ethiopicus* subsp. nov.

Genus OPISTHOLEPTUS Bergroth

61. *O. burmanus burmanus* (Distant)
62. *O. burmanus singalensis* Breddin
63. *O. jordani* Slater
64. *O. chinai* Slater
65. *O. capeneri* sp. nov.
66. *O. elegans* (Hesse)
67. *O. horvathi* sp. nov.
68. *O. ochreipennis* (Reuter)
69. *O. pallidus* (Hesse)
70. *O. vulturnus* (Kirkaldy)
71. *O. parvus* Slater

Genus CYMOPHYES Fieber

72. *C. ochroleuca* Fieber
73. *C. decolor* Stål
74. *C. golodnajana* Seidenstucker
75. *C. essabchana* Seidenstucker

Genus PARISTHMIUS Reuter

76. *P. vitticollis* Reuter

TAXONOMIC CHARACTERS

In general the members of this subfamily present few really striking morphological characters for taxonomic discrimination. One is forced in many instances to rely on relative measurements and occasionally even color differences to separate closely related forms.

Head: relative size and curvature of jugal carinæ, shape of eye, degree of declivity to apex, relative length to width and tumidity of gular region are the most useful characters. Pronotum: length vs. width, convexity, degree of development of a shallow transverse impression near the middle of the sclerite, differences in size and placement of the punctures and degree of development of calloused ridges along the margins have proven most useful. It should be mentioned in relation to width vs. length of the pronotum that a very definite optical illusion is present here. Many of the older authors state that the pronotum is longer than wide, whereas in actual measurement this has proven to not be the case, even though it does appear to be so upon observation. Thus with most of the older writers where micrometer measurements were not used, this character is most unreliable in interpreting the descriptions. Hemelytra: relative lengths are very useful here and sometimes arcuation of the lateral margins and calloused nature of apical corial margin. Abdomen: the apex in some

cases presents good characters in degree of emargination, development of terminal projections; degree of development of the connexivum is often valuable. Fore femora: relative length and width, the number of major and minor spines and their arrangements is occasionally useful, but must be used with caution due to the considerable variability of this character. Labium: the extent of caudal extention is occasionally useful, but usually of more importance is the relative development of the basal segment in relation to the head and to the other segments. Antennæ: relative lengths of great importance, degree of curvature of terminal segment, development of swelling at apex of first segment and sometimes spotting and pubescence. Members of the genus *Pachygrontha* exhibit great sexual dimorphism in regard to the length of the antennæ much longer than those present in the females, this has led to erroneous conclusions in the past and the creation of several species based upon the opposite sex from that previously described. This is certainly the case in regard to *semperi* Stål and *brevicornis* Stål and *bipunctata* Stål and *confusa* Distant. Genitalia: the gonostyli of the males have proven to be the only useful characters in the genitalia, although the female parts have not as yet been investigated to any extent. The male gonostyli are bilaterally symmetrical, very small and while of value in sorting species into groups, they are rarely of value in segregating very closely related species and have been on the whole rather disappointing characters in this subfamily. Color: the writer admits to having approached the use of color with some prejudice despite its use by Stål and others. However, the presence or absence of color spots and their arrangements along the apical margin of the corium and on the humeral angles of the pronotum appears to be quite reliable. I have therefore utilized them extensively in the specific keys in an attempt to avoid the cumbersome characters of ratios and the difficulty of interpretation of some descriptive relationships.

Subfamily PACHYGRONTHINÆ Stål

Pachygronthida Stål, Hemip. Afr. 2 (1865) 121, 145–6.
Pachygronthina Stål, Ofv. Vet. Akad. Forh. 29 (1872) 39.
Pachygronthina Stål, Enum. Hemip. 4 (1874) 138.
Pachygronthina Uhler, U. S. Geol. Geog. Surv. Bull. 1 (1876) 307.
Pachygronthina Berg, Hemip. Argent. (1879) 107.

Pachygronthinæ DISTANT, Centr. Amer. Heter. Biol. 1 (1882) 199.
Pachygronthini PUTON, Hemip. Palearct. Cat. (1886) 24.
Pachygronthidæ LETHIERRY and SEVERIN, Gen. Cat. Hemip. 2 (1894) 179.
Pachygronthinæ DISTANT, Fauna Brit. India Rhynch. 2 (1904) 39.
Pachygronthina OSHANIN, Verzeich. Palearch. Hemip. 1 (1906) 292.
Pachygronthini BANKS, Nearct. Heter. Cat. (1910) 59.
Pachygrontinæ OSHANIA, Palearct. Hemip. Kat. (1912) 31.
Pachygronthinæ BARBER, Psyche 24 (1917) 134–135.
Pachygronthinæ VAN DUZEE, N. Amer. Hemip. Cat. (1917) 173.
Pachygronthinæ BARBER, Conn. Geol. Nat. Hist. Surv. Bull. 34 (1923) 720.
Pachygronthinæ SINGH-PRUTHI, Ent. Soc. London Trans. (1925) 159.
Pachygronthinæ BLATCHLEY, Heteropt. E. N. Amer. (1926) 379–380.
Pachygronthinæ HUTCHINSON, Conn. Acad. Arts Sci. Mem. 10 (1934) 134.
Pachygronthinæ FROESCHNER, Amer. Midl. Nat. 31 (1944) 636, 642.
Pachygronthinæ TORRE BUENO, Ent. Amer. 26 (1946) 10, 51.
Pachygronthinæ BARBER, Soc. Cubana Hist. Nat. Mem. 19 (1947) 72.

Type genus: *Pachygrontha* Germar, 1837.

Head more or less declivent, inserted in thorax to eyes; fore femora strongly swollen, armed below with both large and small spines, front tibiæ shorter than the femora; all abdominal spiracles located ventrally on abdomen; all ventral abdominal sutures straight and reaching lateral margins; bucculæ short, confined to front of head, interocular setæ absent, maximum width of head across eyes narrower than basal width of pronotum; hind margin of pronotum straight or nearly so, pronotum often with a median transverse impression, but never with a deep groove dividing the pronotum into two definite regions; hemelytra not extending over edges of connexivum when latter is expanded; veins of wing membrane not anastomosing or connected by cross vein near base; surface strongly punctured above and below; male gonostyli bilaterally symmetrical; sexes often sexually dimorphic; dorsal abdominal scent glands of nymphs present on anterior margins of tergites four and five.

DISTRIBUTION AND PHYLOGENY

The distribution of the species of this subfamily is essentially tropical and subtropical with an occasional species extending into more temperate regions. In tropical areas the distribution is world-wide, although absent from the truly oceanic islands.

When one attempts to understand the phylogeny of this group of insects he is faced with a number of difficulties that militate

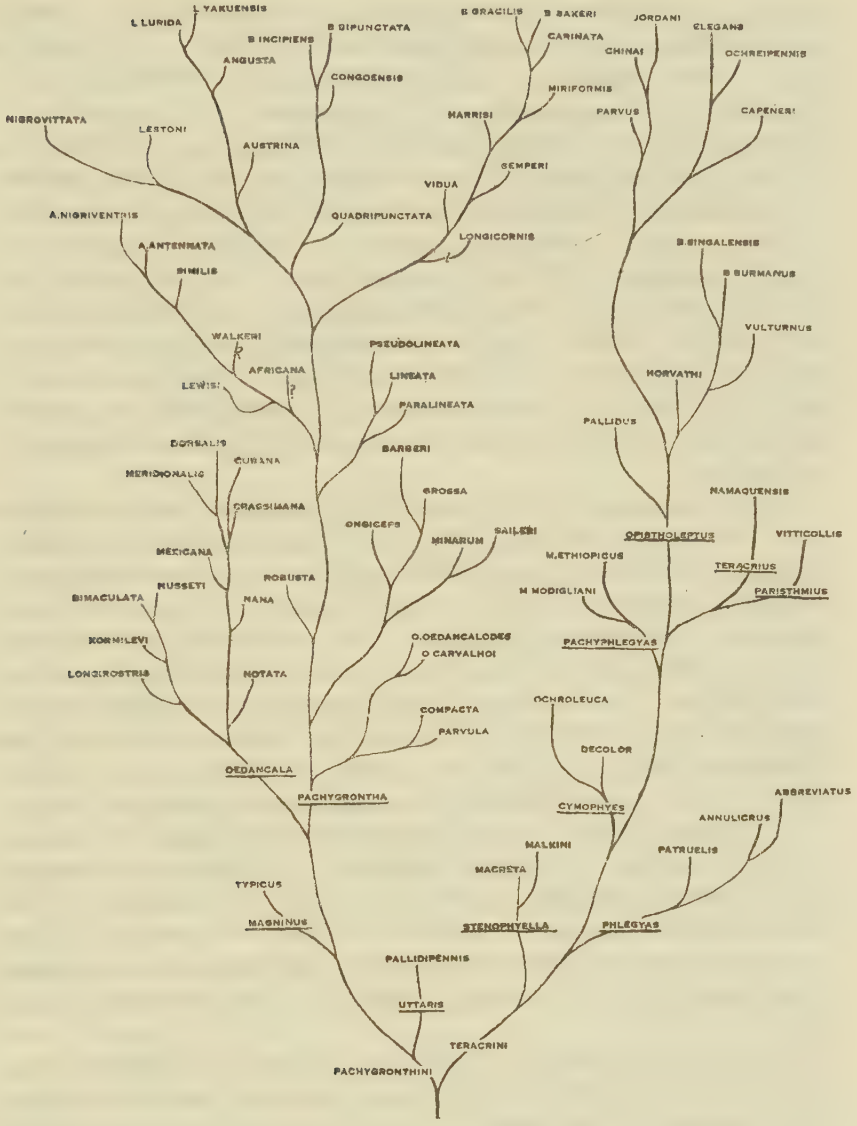

FIG. 2. Phylogenetic tree of subfamily *Pachygronthinæ*.

against conclusions that are more than speculative. Among the difficulties may be mentioned the following: 1. Complete lack of fossil evidence. 2. Very incomplete information as to the range of the majority of the species. 3. The possibility of the existence of many additional species as yet unknown. 4. Very little information on the biology of any of the species. 5. The rather primitive nature of our knowledge of relationships of the various tribes and genera of tropical Lygæidæ in general, making it difficult to understand the position of this subfamily relative to other lygæid groups. Nevertheless, there are certain evident facts of morphology and zoögeography that are indicative and these are discussed in the hope they will be of value to future students of this group of insects and in some small measure to the subject of zoögeography in general.

It soon becomes evident to one studying the Pachygronthinæ that the two tribes are very dissimilar and only distantly related. They have been placed together in a single subfamily primarily because of the ventral position of the abdominal spiracles (Hutchinson, 1934). This placement is probably valid, (I have not felt it expedient to evaluate higher group relationships at this time) but it must be realized that in many aspects, particularly habitus, the Teracrini approach the Heterogastrinæ and that no genus in either tribe shows characters that are definitely intermediate between the two.

The genus *Uttaris* is very anomalous and appears to have no close relatives within the subfamily. However, the elongate first antennal segment together with certain features of the male gonostyli, appear to relate *Uttaris* to *Pachygrontha.* Thus I have retained the genus within the Pachygronthini although it certainly is only remotely related to other members of the tribe.

There are a number of bits of evidence to indicate that within the Lygæidæ the subfamily is one of ancient lineage. The presence of monotypic or very small genera endemic in widely separated geographic areas, related forms occurring in different continental areas without evident connecting forms and the relative absence of large genera with numerous related species all seem to indicate a relict fauna once more extensive in distribution, particularly over the temperate portions of the world. The Teracrini in particular are striking in possessing a number of small genera rather isolated geographically.

For example *Stenophyella* is confined to Australia, *Paristhmius* to Madagascar, *Teracrius* to South and Central Africa, and *Cymophyes* to the eastern Mediterranean. In the Pachygronthini, *Magninus* is confined to Australia and *Uttaris* to S. Africa, while within the genus *Pachygrontha* itself there are a number of species groups that may be cited as indicating ancient isolating factors such as the *lineata* group in South Africa, the western hemisphere *longiceps* complex, the *antennata* group in Japan and north-eastern Asia, and *P. robusta* in Australia.

In approaching the distribution of Pachygronthinæ in the light of existing theories it is premature to attempt an exhaustive analysis at our present state of knowledge, but it is evident that such theories as continental drift and Gonwandaland run into difficulties in the western hemisphere where one does not find closely related species in southern South America, Africa and Australia, etc. The radiation theory from the northern hemisphere is plausible. If one assumes an extensive range for the subfamily over the Holarctic region during warm periods such as the Cretaceous, many of the otherwise awkward distribution patterns take on some apparent meaning. For example, the presence of species of *Pachygrontha* in the tropical portions of all the continental areas. However, as with other insect groups the probable antiquity together with the lack of fossil evidence makes it difficult to understand whether we are dealing to any extent with a Pleistocene ice age phenomenon. It is possible that the latter is only a minor factor and that the major distribution patterns as seen today were laid down much earlier in geologic time.

Oriental-Ethiopian fauna.—The most striking feature of the distribution of Pachygronthinæ in these regions is the similarity of the faunas. From the evidence of this one insect group alone one certainly would not consider that two zoögeographic regions were involved. Southern Africa does have two endemic genera, *Uttaris* and *Teracrius* and including the island of Mauritius, a distinct group of *Pachygrontha,* (the *lineata* group). The Oriental region has no endemic genera, but the *bakeri* and *lurida* groups of *Pachygrontha* are confined to it. In contrast *Pachygrontha bipunctata* ranges over almost the entire area from Yakushima off the southern tip of Japan (the northeastern edge of the Oriental region), through the Ryukyus, Philippines, East Indies, New Guinea, N. E. Australia, India,

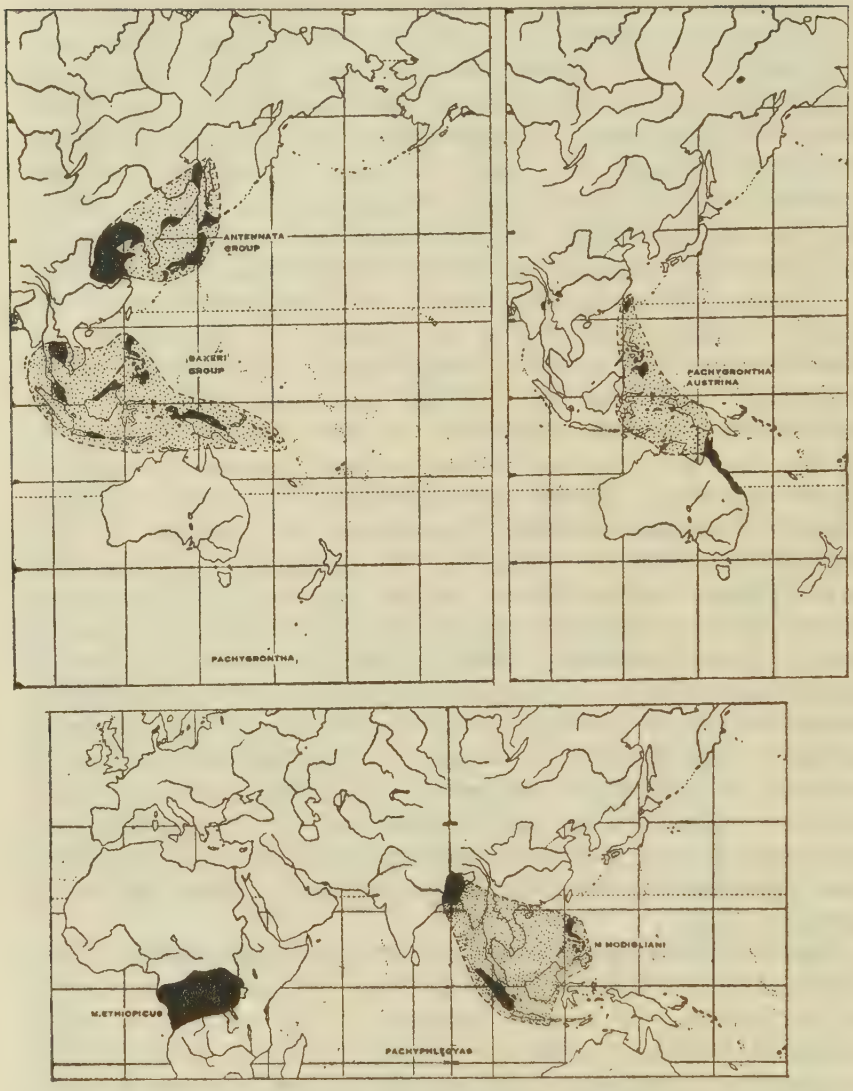

FIG. 3. Distribution of *Pachygrontha bakeri* and *antennata* groups: *Pachygrontha austrina* and genus *Pachyphlegyas*.

Seychelle Island, apparently over most of tropical Africa and becomes sub-specifically different only in South Africa (see map). In the Teracrini we find *Pachyphlegyas modigliani* in the Philippines, East Indies, and India and a very closely related subspecies in Central Africa. *Pachygrontha nigrovittata,* a widely ranging Oriental species, has its counterpart in Africa in the similar *P. lestoni. Opistholeptus* as a genus has much the same range of *P. bipunctata* with the exception of the northeastern extension of the latter through the Ryukyus (see map) and here again the various species are quite similar in the two regions.

Palearctic fauna.—This fauna is an impoverished remnant consisting of *Cymophyes* with four closely related species on both sides of the eastern Mediterranean and extending eastward into Turkestan and the Caucasus and the *Pachygrontha antennata* group in Japan and the adjacent Asiatic mainland. The chief significance of the Palearctic element is its impoverishment. *Cymophyes* probably represents all that remains of a fauna stretching from Africa across the now-arid middle East to India. It is rather striking, although perhaps coincidental, to find that representatives of the subfamily are present only in the areas that Reinig (1937) has indicated as being "forest refuges" that survived the glaciation of the northern Paleartic areas. While the species certainly were not influenced by forest cover, the main premise of Reinig's theory is that these areas possessed a more humid climate than the loess areas and humidity certainly is a factor in sedge and rush feeding species. Thus the fact that the distribution of *Cymophyes* and the *Pachygrontha antennata* group coincides remarkably with Reinig's map of forest refuges, may have a considerable significance.

Australian fauna.—This fauna, in common with many other animal groups, is striking in the possession of a number of endemic genera and species. Thus *Stenophyella* and *Magninus* are restricted to Australia and are very distinct from anything else in the subfamily. *Pachygrontha robusta* is very unlike any of the other eastern hemisphere *Pachygrontha* although unfortunately known only from the type specimen. The Darwin area, northeastern Australia and southward into Victoria along the eastern coast has several Oriental species and apparently represents an extension of that fauna southward from New Guinea. These species probably will be found in the

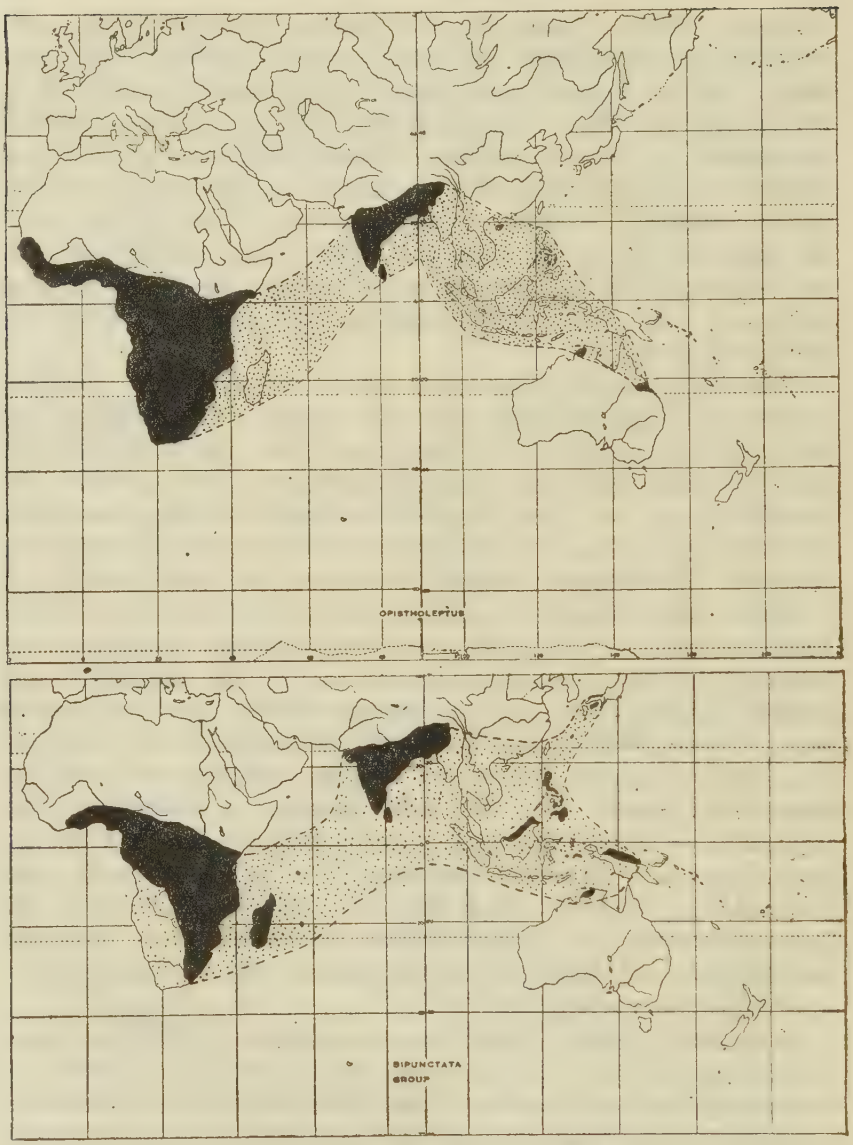

FIG. 4. Distribution of genus *Opistholeptus* and *Pachygrontha bipunctata* groups.

pockets of tropical rain forest country occurring along this coastal area. Probably this has been a rather recent re-invasion of the area by Oriental elements. Thus we find *Pachygrontha austrina* rather common in eastern Australia and extending northward into the Philippines and Formosa. The wide ranging *P. bipunctata* reaches northern Australia and the Oriental-Ethiopian genus *Opistholeptus* is represented by a single species in this part of the sub-continent.

Madagascar.—As with other groups of animals, this interesting island indicates its isolated position by the presence of the endemic genus *Paristhmius.* The other species appear to be more nearly Ethiopian than Oriental. *P. quadripunctata,* while quite a distinctive species, is clearly a member of the predominantly African *bipunctata* group. *P. angularis* which I have not seen appears to be closely related to *P. africana.* I have questioned whether the single specimen of *Teracrius namaquensis* examined from the island might not represent an introduction, certainly additional specimens would be desirable to ascertain if this species is truly a member of the Mascarene fauna.

Neotropical-Nearctic fauna.—This Fauna I consider to have been derived from eastern hemisphere ancestry. Two genera are endemic, *Phlegyas* and *Œdancala* and these have no really close relatives anywhere in the eastern hemisphere. *Œdancala* is obviously derived from western hemisphere *Pachygrontha* through the *œdancalodes* group. I suspect that western hemisphere *Pachygrontha* reached the area of two widely separated periods. We know that North America and Asia were in contact in pre-glacial times as well as post-glacial. Beaufort (1951) believes that land bridges were present in the north Pacific in glacial, post-glacial, Tertiary and perhaps Mosozoic time. Thus there apparently has been ample opportunity for *Pachygrontha* species to have reached the western hemisphere at two widely separated periods and even for both invasions to have taken place in pre-glacial times. The *longiceps* group, while quite distinct, possibly arose from an ancestral stock similar to that of the *nigrovittata* and *lurida* groups. The *œdancalodes* group has no relationships evident in the eastern hemisphere and one is tempted to regard these species as of very ancient lineage.

The question of centers of origin is highly speculative. Evidence for an eastern hemisphere origin lies in the greater

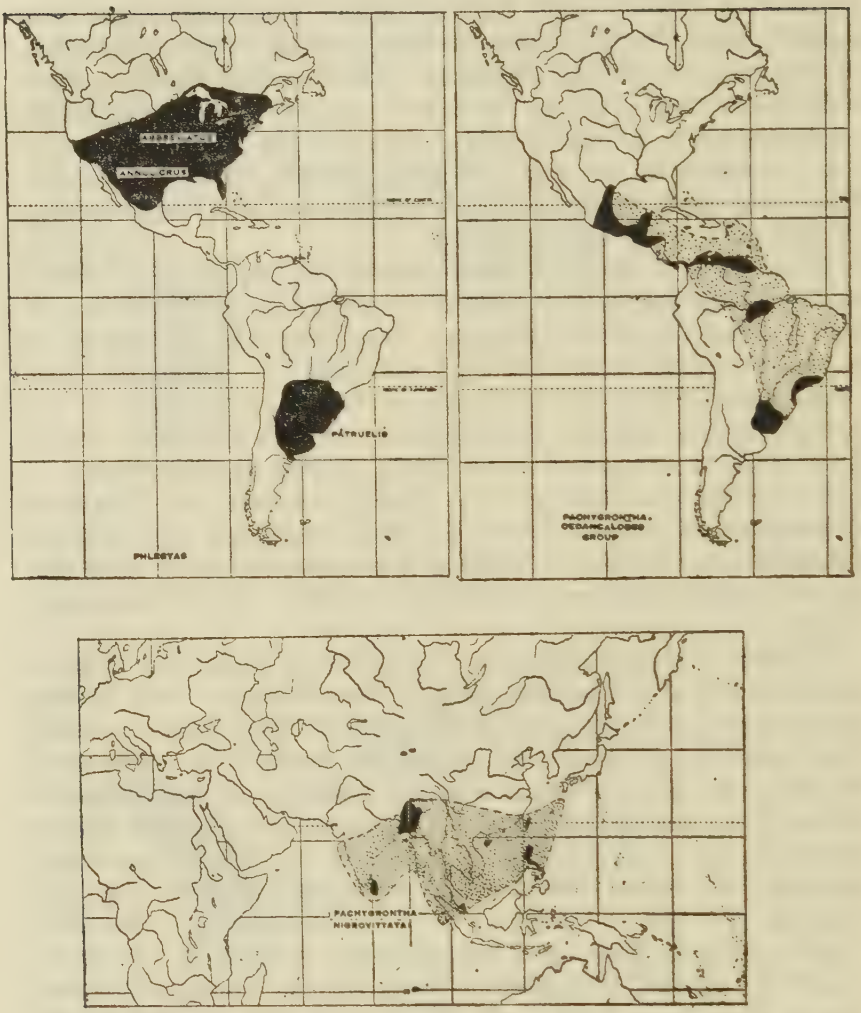

FIG. 5. Distribution of genus *Phlegyas, Pachygrontha nigrovittata* and *Pachygrontha œdancalodes* groups.

diversity of genera and species and the presence of isolated genera such as *Uttaris, Magninus* and *Stenophyella* and *Cymophyes*. Evidences favoring western hemisphere origin might be the presence of two types of *Pachygrontha* more dissimilar than between any species of the genus in the eastern hemisphere as well as the formation of a derivative genus in *Œdancala*. On the whole I should think it is somewhat more likely that the group arose in the eastern hemisphere with ancestral forms having crossed a northern Pacific migration route during warm periods of the earth's history. Evidence for an Antarctic dispersal path is lacking in that the entire subfamily is apparently absent from New Zealand; the genus *Phlegyas* is more closely related to Oriental *Pachyphlegyas* and *Opistholeptus* than to Australian *Stenophyella* and with some of the western hemisphere *Pachygrontha* having related forms in the Oriental region.

Dispersal.—It is most unfortunate that so very little is known of the biology of most of the species. What evidence there is indicates that the members are phytophagous on sedges, rushes and grasses. It would seem that insects of such habits might be readily dispersed by water. This probably happens over short distances, but the total absence of the subfamily in the oceanic islands of the Pacific would seem to be strong evidence against its importance for colonization over widely separated areas. The adults probably are not strong fliers although some have, on occasion, been taken at light, but never in any considerable numbers. It is interesting to note that Glick (1939) in his extensive study of insects in the air failed to take a single member of this subfamily, although 383 Lygæidæ, representing 28 species were taken, some as high as 7,000 feet. Thus it seems likely that slow contraction and expansion of the species ranges and consequent invasion of adjacent areas has been the normal distribution pattern. A study of the biology of these species to determine possible correlation of range with that of host plants should prove to be most valuable.

Key to the tribes

1. First antennal segment greatly exceeding apex of clypeus, usually as long as the succeeding segments and frequently much longer; male gonostyli usually with a tuft of long hairs on the convex surface and a projecting "thumb" on the concave area. (Plate 2, fig. 2) ..... PACHYGRONTHINI

   First antennal segment not, or barely reaching the apex of the clypeus and always much shorter than any of the succeeding segments; male gonostyli usually lacking a hair tuft and "thumb," but possessing a sensory patch on the basal half. (Plate 4, fig. 8)..... TERACRINI

Tribe PACHYGRONTHINI

This, the nominal tribe, is composed of four genera, *Œdancala, Pachygrontha, Magninus,* and *Uttaris.* It contains 68 per cent of the known species of the subfamily.

The genus *Uttaris* previously discussed is monotypic and very distinct from other members of the tribe. The relationship is so distant that no conclusions as to its ancestry within the tribe seems possible at the present time, although it may well represent an annectant form.

The monotypic Australian genus *Magninus,* on the other hand, is obviously related to *Pachygrontha* and in a number of respects appears to illustrate primitive characters, such as the lack of an abruptly enlarged apical area of the first antennal segment, non-declivent head and more evenly punctate corium. The relationships of *Pachygrontha* and *Œdancala* are discussed under the latter genus.

Key to the genera

1. Jugal carinæ absent, pronotal margins rounded, third antennal segment fusiform; pronotum black or with black markings ..... *Uttaris*
   Jugal carinæ present and acute; pronotal margins usually sharply angled; third antennal segment filiform or only slightly fusiform; pronotum at most with black punctures ..... 2.
2. Clypeus very strongly compressed, head only very slightly declivent; first antennal segment very thick throughout becoming evenly thickened apically (Plate 1, fig. 2.); distance apex clavus-apex corium subequal to distance apex corium-apex abdomen..... *Magninus*
   Clypeus not strongly compressed, head usually strongly declivent anterior to the antennal bases; first antennal segment frequently slender and sharply swollen near apex, if evenly clavate then the distance apex corium-apex abdomen greater than the distance apex clavus-apex corium ..... 3.
3. Eye as broad as or broader than long, preocular margin as long as or longer than length of eye; species usually elongate with antennæ strongly sexually dimorphic; first segment slender and swollen rather abruptly on terminal portion: (Plate 3, fig. 8) apical segment of antennæ generally much shorter than either segment two or three ..... *Pachygrontha*
   Eye longer than broad and longer than the preocular space, species usually more compact with antennæ rarely strongly sexually dimorphic, often with the first segment gradually enlarged to the apex, terminal segment of antennæ usually nearly as long as either segment two or three ..... *Œdancala*

Genus PACHYGRONTHA Germar

Pachygrontha GERMAR, Silberman's Rev. Ent. **5** (1837) 152–3.
Pachygrontha (sic) SPINOLA, Gen. d'Ins. Arthrop. (1852) 140.
Atractophora STÅL, Ofv. Vet. Akad. Forh. **10** (1853) 260.

Atractophora STÅL, Ofv. Vet. Akad. Forh. 12 (1855) 34.
Atractophora SIGNORET, Ent. Soc. Fr. Ann. (3) 8 (1860) 948.
Peliosoma UHLER, Acad. Nat. Sci. Phila. Proc. 12 (1861) 229.
Dilophos MONTROUSIER, Soc. Linn. Lyon Ann. (2) 11 (1864) 226.
Pachygrontha STÅL, Hemip. Afr. 2 (1865) 146–148.
Pachygrontha STÅL, Enum. Hemip. 4 (1874) 139–141.
Pachygrontha DISTANT, Centr. Amer. Heteropt. Biol. 1 (1882) 200.
Pachygrontha LETHIERRY and SEVERIN, Gen. Cat. Hemip. 2 (1894) 180.
Pachygrontha, DISTANT, Fauna Brit. India, Rhynch. 2 (1904) 40.
Pachygrontha BANKS, Philip. Jour. Sci. § A 4 (1909) 574.
Pachygrontha BANKS, Nearct. Hemip.-Heterop. Cat. (1910) 60.
Pachygrontha OSHANIN, Palearct. Hemip. Kat. (1912) 31.
Pachygrontha BARBER, Psyche 24 (1917) 135.
Pachygrontha BARBER, Sci. Surv. Puerto Rico 14 (1939) 347.
Pachygrontha TORRE BUENO, Ent. Amer. 26 (1946) 54–55.
Pachygrontha BARBER, Soc. Cubana Hist. Nat. Mem. 19 (1947) 72.

Type species: *Pachygrontha lineata* Germar, 1837. Monobasic.
Type species: *Atractophora: Atractophora fusifemur* Stål, 1855. Monobasic.
Peliosoma: Peliosoma antennata Uhler, 1861. Monobasic.
Dilophos: Dilophos solieri Montrouzier, 1864. Monobasic.

Generally elongate slender species, testaceous to ochraceous in color, head rather strongly declivent, clypeus not markedly compressed, jugal carinæ present and acute, eyes broader than long and shorter than the preocular length; pronotum almost always broader at base than median length, usually with a broad shallow transverse impression near center; scutellum with a basal depression and frequently a median longitudinal carina; hemelytra with lateral margins non-explanate, nearly reaching or very slightly exceeding tip of abdomen; abdominal venter impunctate, in males usually unicolorous, in females frequently with a pair of longitudinal black vittæ; fore femora incrassate, armed below with prominent spines; antennæ elongate and filiform or slightly fusiform, basal segment rather abruptly swollen near terminal end, fourth segment much shorter than any of preceding segments, the antennæ strongly sexually dimorphic, much longer in males.

This is much the largest genus of the subfamily in point of number of included species. At present 51 per cent of the known species belong here. Furthermore, this is the only genus of the subfamily that is found in both the Eastern and Western Hemispheres. Despite the rather large number of species, the genus is quite homogeneous. It is possible to ascertain certain groups within *Pachygrontha* that probably represent natural units. These have proven useful even though

certain of the characters used to recognize the groups are relative and comparative and I have been unable to construct a satisfactory key based upon these group relationships.

THE SPECIES GROUPS

The bakeri group.—This is a homogeneous complex occurring chiefly in the large islands off the Asiatic mainland (see maps). It is widely distributed through the Philippines and extends into New Guinea, Borneo with one species ranging into the East Indies and Malaya.

The *bakeri* species are elongate, slender, graceful insects with very long filiform antennæ. They are most easily recognized by the bicolored appearance of the corium resulting from a diffusion of the median color spot on the apical margin of the corium into a broad stripe over the central portion of the corium. The dark area on the corium contrasts strikingly in most species with the light testaceous coloration of the lateral portions of the corium. Many of the species also have the terminal portion of the third antennal segment whitish in strong contrast to the dark basal portion.

The only really spectacular specialization of the carinate jugæ occurs in this group where *miriformis* has the carinæ produced into forward directed spines (Plate 3, fig. 5) and *carinata* has carinæ that are enormously increased in height although with the conventional rounded anterior margin.

The lurida group.—A group of smallish, light testaceous species with almost no basal depression to the scutellum and no, or very little, indication of transverse impression across the pronotum. The lateral corial margins are nearly straight, the fore femora weakly incrassate, the clypeus relatively little declivent for the genus and the head considerably produced forward of the antennal bases (Plate 2, fig. 9). This group is related to *bipunctata* in the general form of the gonostyli (Plate 2, fig. 3).

This group is, insofar as known, confined to the Philippines and to Yakushima Island, Japan. One can feel fairly confident that the group will be found to be present in favorable locations throughout the Ryukyu Islands.

Pachygrontha austrina resembles *lurida* very closely in general habitus, but differs in the form of the male gonostyli and in the more abruptly and strongly declivent condition of the head (plate 2, fig. 8). For the present it seems advisable not to consider *austrina* as a member of this group.

The bipunctata group.—This complex group is composed of the very widely ranging *bipunctata* which occurs over much of the Oriental and Ethiopian regions, a subspecies of *bipunctata* in South Africa, the nearly sibling *congœnsis* in Central Africa and the rather distinct *quadripunctata* in Madagascar. The group is most easily recognized by its very distinctive male gonostyli (Plate 2, fig. 7), the elongate slender, flattened body with light testaceous coloration, lack of basal scutellar depression, flattened pronotum, strongly declivent head and low, even jugal carinæ. In general habitus the group is similar to *lurida,* but the head shape and gonostyli are distinctive.

The origin of this group is probably Ethiopian with *bipunctata* ranging eastward through the tropical regions of Asia and into the northeastern edge of Australia, where it is probably associated with the patches of rain forest along the east coast.

The nigrovittata group.—I had thought of this group as representing an offshoot of the *lurida* group until the discovery of *lestoni* in Africa led to the belief that perhaps a different origin is indicated. In most respects this group resembles *lurida,* but is composed of two rather larger species with a pair of black spots along the corial margins and one on the humeral angles of pronotum, the pronotum is elongate, nearly as long as wide with nearly straight lateral margins, coloration testaceous scutellar depression lacking.

This group is considered to be composed of two species, *nigrovittata* in the Oriental region and *lestoni* represented by a single African specimen.

The lineata group.—This group comprises rather moderately sized species often marked with ferrugineous coloration, a prominent lævigate median pronotal stripe, a deep transverse pronotal impression and distinctive genitalia (Plate 2, fig. 11). The group is quite distinct from anything else found in the Old World and apparently has been isolated for a considerable period at some time in the past.

At present the *lineata* group is represented by two closely related species in South Africa and a species on the island of Mauritius.

The antennata group.—This is a very distinctive group within the genus characterized by possessing unusually stout, thick fore femora, distinctive male gonostyli (Plate 2, fig. 4), blackish coloration, low jugal carinæ and a deep basal scutellar depression. In distribution, the group is restricted to the extreme

eastern portion of the Palearctic region (see map). It is interesting to note that this Palearctic group is present over all of Japan, common even on Kyushu, but apparently absent in the Ryukyus and on Yakushima Island where the fauna, as evidenced by this subfamly, is Oriental in its affinities.

The status of the three forms comprising this group is most interesting and offers an attractive field for population analysis by resident workers. *Similis* and *antennata* appear to be distinct sympatric species in Japan. I consider Reuter's *nigriventris* from Siberia to be subspecifically distinct from *antennata*. If this interpretation proves to be valid upon study of a more adequate series one may hypothesize that *similis* reached Japan at a comparatively early date and here developed specific status from the mainland form. On this reasoning *antennata* would represent a more recent arrival in the islands and thus has developed only subspecific status from the mainland *nigriventris*.

The longiceps group.—The majority of Western Hemisphere species belong to this complex. The species are all of moderate to large size, with profuse, rather even, puncturing in contrast to most eastern Hemisphere species where the corial punctures, in particular, are absent from certain areas of the corium. The species completely lack a transverse pronotal impression and have the fore femoral spines chiefly of large size making separation into major and minor spines rather difficult.

This group is actually separable into two readily recognizable divisions. The first composed of *barberi, grossa,* and less typically *longiceps* has very elongate antennæ, usually over twice the pronotal length, the terminal swelling of the first segment confined to a small area at the distal end of the segment (Plate 3, fig. 8) and, very importantly, with the jugal carinæ nearly straight over their entire length (Plate 3, fig. 11). The second division composed of *minarum* and *saileri* has much shorter antennæ with the terminal first antennal swelling occupying a considerable portion of the terminal half of the segment (Plate 3, fig. 9) and the jugal carinæ markedly bowed or sinuate (Plate 3, fig. 7).

The complex is entirely tropical occurring in South and Central America and in certain of the West Indian islands.

In general appearance the species somewhat resembles the *nigrovittata* and *lurida* groups of the Old World and there are similarities in the gonostyli. There is little relationship to the *antennata* group and thus if the theory of Old World origin

is correct, migration certainly was at a time when the tropics extended northward a great distance and when the *antennata* group was probably located northwestward of its present distribution. At this time ancestral forms of the Philippine and Ryukyu species probably ranged along the northeast coast of Asia and crossed in the region of the Bering Straits or the Aleutian Islands.

The œdancalodes group.—This group is composed of very small species for the genus, much different from the *longiceps* group in many respects. As noted in the *Œdancala* discussion this group is somewhat transitional between the two genera.

The *œdancalodes* species are distributed through Central America, tropical South America and certain of the islands of the West Indies. In addition to the small size of the individuals the group may be characterized by the prominent scutellar impression, sinuate pronotal margins, lack of differentiated small spines on the fore femora and distinctive gonostyli (Plate 2, figs. 5, 10).

There are several species such as *lewisi, africana, walkeri,* and *robusta* whose affinities are obscure. Of these *robusta* appears to be quite distinctive from any of the above groups, *walkeri* may be a rather aberrant member of the *bakeri* group.

Key to the species of Pachygrontha of the Western Hemisphere

1. Distance from apex clavus to apex corium less than length of pronotum; small species, 6.00 mm or less ..... 2.
   Distance from apex clavus to apex corium distinctly greater than length of pronotum; large elongate species, 7.50 mm or greater.. 4.
2. Apical one-third of third antennal segment white, strongly contrasting with color of basal two-thirds of segment ..... 3.
   Third antennal segment unicolorous throughout ..... *P. Compacta*
3. Distance from apex corium to apex abdomen greater than length of pronotum ..... *P. œdancalodes œdancalodes*
   Length of pronotum greater than distance from apex corium to apex abdomen ..... *P. œdancalodes carvalhoi*
4. Apical one-third of third antennal segment white, usually contrasting with remainder of segment; apical margin of corium with two black spots present, one at apex. second midway along margin. *P. longiceps*
   Third antennal segment unicolorous; apical margin of corium with a black spot midway along margin or immaculate..... 5.
5. First antennal segment more than twice length of pronotum; jugal carinæ nearly straight, never more than slightly bent outward on posterior half; first antennal segment always more than 3.50 mm .... 6.
   First antennal segment considerably less than twice length of pronotum; jugal carinæ distinctly bent outward on posterior portion; first antennal segment always less than 3.00 mm ..... 7.

6. Apical margin of corium immaculate, lacking a black color spot ..... *P. grossa*
   Apical margin of corium with a conspicuous black color spot midway along margin ..... *P. barberi*
7. Fore femora with a minor spine present between the third and fourth major spines (from apex); second antennal segment less than or barely twice as long as the interocular space ..... *P. saileri*
   Fore femora lacking a minor spine between the third and fourth major spines; second antennal segment more than twice as long as the interocular space ..... *P. minarum*

Key to the species of Pachygrontha of the Eastern Hemisphere

1. Apical one-third to one-fourth of third antennal segment distinctly white or very light testaceous, strongly contrasting in color with basal portion of segment ..... 2.
   Third antennal segment unicolorous throughout, or if somewhat lighter toward apex then possessing a predominately black pronotum and a dark terminal antennal segment (i.e. *similis* Uhl., Japan)..... 11.
2. Apical margin of corium with a diffuse chocolate-brown median stripe or a single median spot, if apical color spot is present, then jugal carinæ prominently exceeding clypeus ..... 3.
   Apical margin of corium with a pair of well defined dark brown spots present, one at apex and a second midway between apex and claval angle; this latter area sometimes expanded into a dark stripe or blotch ..... 9.
3. Jugal carinæ very prominently produced and extending conspicuously forward of the anterior margin of the clypeus..... 4.
   Jugal carinæ little produced, not extending forward to the anterior margin of the clypeus ..... 5.
4. Jugal carinæ elongate and acutely pointed at apex (Plate 3, fig. 5) ..... *P. miriformis*
   Jugal carinæ evenly rounded apically (Plate 3, figs. 7, 11).. *P. carinata*
5. Scutellum possessing a well defined, usually deep prominent basal depression; large robust species usually 8 to 10 mm, with apical one-half of apical corial margin strongly calloused ..... 6.
   Scutellum with basal depression absent or very obscurely developed, smaller, slender species with apical corial margin non-calloused .. 7.
6. Males with first antennal segment over four times length of pronotum (females unknown) (Mysol Island) ..... *P. longicornis*
   Males with first antennal segment less than three times length of pronotum (Oriental Region) ..... *P. semperi*
7. Width of head across eyes greater than length of head; transverse constriction of pronotum weakly developed or nearly absent; first antennal segment of males usually less than 7.00 mm (if exceeding 7 mm then scutellum with a prominent median yellow stripe).... 8.
   Length of head greater than width of head across eyes; transverse constriction of pronotum deep, both anterior and posterior lobes strongly convex; first antennal segment of males exceeding 7 mm in length ..... *P. bakeri gracilis*

8. Length of pronotum greater than distance from apex clavus to apex corium; four major spines present on fore femora; pronotal punctures relatively widely separated (Philippines).... *P. bakeri bakeri*
   Distance from apex of clavus to apex of corium greater than length of pronotum; fore femora usually with five major spines present; pronotal punctures very closely spaced (New Guinea).... *P. harrisi*
9. Caudo-lateral angles of pronotum marked with a prominent dark brown spot (New Guinea, Australia) ..... 10.
   Caudo-lateral pronotal angles testaceous, unicolorous with remainder of pronotal disc. (Madagascar) ..... *P. quadripunctata*
10. Fore femora relatively long, ratio of width across eyes to length fore femora 3.00 or greater in males, 2.50 or greater in females; surface dull not strongly shining ..... *P. vidua*
    Fore femora shorter ratio of width across eyes to length fore femora 2.40 maximum in males, 2.20 maximum in females; dorsal surface strongly shining ..... *P. walkevi*
11. Apical margin of corium with a median and an apical dark color spot, the median spot occasionally extending anteriorly on the corium as a stripe ..... 12.
    Apical margin of corium immaculate, or possessing a color spot or stripe midway along margin, the apical spot always absent..... 22.
12. Pronotal punctures much more closely spaced along antero-lateral margin than on remainder of disc, these punctures often dark in color giving the appearance of a darkened stripe..... 13.
    Pronotal punctures not or only slightly more closely set near antero-lateral pronotal margin; area of calli black or at least marked with a crescent shaped black dash along mesal margin..... 18.
13. Length of head greater than length of third antennal segment (South Africa) ..... *P. pseudolineata*
    Length of head much less than length of third antennal segment.... 14.
14. Caudo-lateral pronotal angles marked with a prominent dark brown spot ..... 15.
    Caudo-lateral pronotal angles unicolorous, or nearly so, with remainder of disc, never marked with a prominent dark color spot..... 16.
15. Clothed above with minute, dense, sericeous pubescence; pronotum markedly wider than long (South Africa) ..... *P. africana*
    Nearly glabrous above, bearing a few semi-erect, nonsericeous hairs; length and width of ponotum subequal (Central Africa) .... *P. lestoni*
16. Scutellum with black markings at base, strongly contrasting with remainder of scutellum, base with a prominent depression; pronotum with lateral margins strongly sinuate, the dorsal surface prominently convex; smaller species under 9.00 mm in length ..... 17.
    Scutellum testaceous, nearly unicolorous throughout, with basal depression very obsoletely developed or absent, pronotum with lateral margins nearly straight, the dorsal surface not strongly convex almost flat on posterior lobe; a larger species usually nearly 10.00 mm in length (Oriental) ..... *P. nigrovittata*
17. Width of pronotum relatively broad, the length of the fore femora less than one and one-fourth times the pronotal width, median calloused stripe on pronotum becoming obsolete on posterior lobe, transverse impression obsolete (Mauritius)..... *P. paralineata*

Width of pronotum narrower, length of fore femora more than one and one-third times the pronotal width; median calloused stripe on pronotum continuous over entire pronotum and scutellum and strongly contrasting with the ferrugineous color of the remainder of pronotum; transverse impression on pronotum deep and conspicuous (South Africa) ..... *P. lineata*

18. Distance apex corium-apex abdomen considerably greater than width of pronotum, or if subequal (some females of *walkeri*) then abdominal connexivum lacking black spots and having head castaneous (Celyon, Australia) ..... 19.

Width of pronotum greater than, or subequal to, distance apex corium-apex abdomen; abdominal connexivum usually heavily spotted with black; head black or conspicuously marked with black..... 20.

19. Head width and length subequal; large species over 8.50 mm; surface dull not strongly shining (Ceylon) ..... *P. lewisi*

Width across eyes greater than head length; smaller species usually under 8.00 mm; dorsal surface strongly shining (Australia) *P. walkeri*

20. Black spot present on connexivum immediately adjacent to apex of corium; pronotum with anterior lobe strongly convex; terminal antennal segment dark, strongly contrasting with segment three ..... *P. similis*

Area of connexivum adjacent to apex of corium lacking a black spot; pronotum with transverse impression obsolete, the anterior region not strongly convex; third and fourth antennal segments usually nearly unicolorous ..... *P. antennata* 21.

21. Males with length of first antennal segment more than twice length or width of pronotum ..... *P. antennata antennata*

Males with length of first antennal segment less than twice length or width of pronotum ..... *P. antennata nigriventris*

22. Apical corial margin bearing only a single small usually inconspicuous dark spot midway along the margin ..... 23.

Apical corial margin with a large conspicuous spot, the median area usually with a diffused darkened area that sometimes extends well forward on the corium ..... 29.

23. Length of pronotum greater than width (Philippines)..... *P. angusta*

Width of pronotum greater than median length or if median length of pronotum greater than width then length of first antennal segment less then three times pronotal width ..... 24.

24. Straight line distance from apex of antenniferous tubercles to furthest anterior extension of clypeus less than or subequal to lateral length of an eye (Plate 2, fig. 8) ..... 26.

Straight line distance from apex of antenniferous tubercles to furthest anterior extension of clypeus greater than lateral length of an eye (Plate 2, fig. 9) ..... *P. lurida* 25.

25. Length of pronotum less than two and one-fourth times the interocular space (2.06 to 2.17); males with first antennal segment less than three times length of pronotum ..... *P. lurida lurida*

Length of pronotum more than two and one-fourth times interocular space (2.39 to 2.40); males with first antennal segment more than four times length of pronotum ..... *P. lurida yakuensis*

26. Distance from apex of clavus to apex of corium greater than width of pronotum ..... *P. austrina*
    Width of pronotum greater than distance from apex of clavus to apex of corium ..... 27.
27. Distance from posterior edge of jugal carinæ to furthest anterior extension of clypeus subequal to or greater than distance across posterior edges of jugal carinæ ..... *P. congoensis*
    Distance from posterior edge of jugal carinæ to furthest anterior extension of clypeus less than distance across posterior edges of jugal carinæ ..... *P. bipunctata* 28.
28. Length over 7.50 mm; ratio of pronotal width to total length over 4.60 ..... *P. bipunctata incipiens*
    Length usually less than 7.00 mm; ratio of pronotal width to total length usually less than 4.50 ..... *P. bipunctata bipunctata*
29. Second labial segment exceeding base of head by one-half or more its length; corial punctures very closely and evenly spaced; dorsal surface dull ..... *P. robusta*
    Second labial segment barely attaining or at most slightly exceeding base of head; corial punctures widely and irregularly spaced; dorsal surface shining ..... *P. walkeri*

PACHYGRONTHA LONGICEPS Stål, 1874.

Pachygrontha longiceps Stål, Enum. Hemip. 4 (1874) 140.
Pachygrontha longiceps Lethierry and Severin, Gen. Cat. Hemip. 2 (1894) 180.
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Pachygrontha longiceps Torre Bueno, Ent. Amer. 26 (1946) 55. (Pt.)
Pachygrontha longiceps Barber, Soc. Cubana Hist. Nat. Mem. 19 (1947) 74. (Pt.)

General coloration testaceous, shining; a pair of spots on apical margin of corium, one at apex, second midway between apex and claval commissure, punctures on surface, particularly laterad on pronotum, female ovipositor and longitudinal vitta on venter of female midway between meson and lateral margin, spiracular openings, apical three-fourths of terminal labial segment, underside of fore femora, apices of fore femoral spines, apical tarsal segment, diffused area on enlarged apex of basal antennal segment, sternal areas mesad, dark brown to castaneous; underside of head and pleural region often castaneous; apical one-third of third antennal segment white.

Clothed below with decumbent, sericeous pile, above with sparse scattered hairs, these most prominent on head, lateral areas of pronotum and appendages.

Head elongate, slender, little narrowed to apex, clypeus declivent, jugal carinæ very slightly bowed outward, prominently elevated, length head, 1.20 mm (1.12 to 1.32), width across eyes, 1.08 mm (1.04 to 1.12); interocular space, 0.66 mm (0.60 to 0.72); pronotum evenly and strongly narrowed anteriorly, lateral margins lævigately calloused, nearly straight, slightly expanded at basal angles, transverse impression absent, a faint median line present mesad, but becoming indistinguishable toward both base and apex, length pronotum, 1.61 mm (1.40 to 1.72); width pronotum, 1.77 mm (1.60 to 1.90); scutellum with a prominent smooth median carina, basal depression absent or very faintly indicated, length, 1.25 mm. (1.16 to 1.32); hemelytra slender and elongate, lateral margins nearly straight, slightly expanded just before apex of claval commissure, membrane barely attaining or just exceeding apex of abdomen, distance apex clavus-apex corium, 1.80 mm (1.48 to 1.92); distance apex corium-apex membrane, 1.86 mm (1.56 to 2.02); labium reaching nearly midway onto mesosternum, second segment slightly exceeding anterior margin of prosternum; fore femora relatively elongate and slender, armed below with 6 to 8 large spines, usually 6 major spines and 2 smaller ones intermixed distad, length male, 2.97 mm (2.68 to 3.20); female, 2.74 mm (2.44 to 3.00); second tarsal segment appreciably shorter than segment three; antennæ elongate, filiform, a relatively short apical expansion near apex of first segment, terminal segment relatively elongated and noticeably curved, length I, males, 4.84 mm (4.44 to 5.80); females, 3.09 mm (2.64 to 3.44); II, males, 3.53 mm (3.20 to 4.20); females, 2.15 mm (1.84 to 2.48); III, males, 2.48 mm (2.20 to 2.96); females, 1.72 mm (1.52 to 1.80); IV, males, 1.05 mm (1.00 to 1.08); females, 0.95 mm (0.92 to 0.96). Total length, 8.48 mm (7.60 to 9.00).

Deposition of type.—Stockholm Museum.

Material examined.—Holotype, female, Bogota, Colombia (Lindig), 6 males, 7 females. BRITISH HONDURAS: Rio Grande, Punta Gorda. COSTA RICA: Hamburg Farm. GUATEMALA: Morales, Los Arantos. PANAMA: La Chorrera. Specimens in Stockholm Museum, C. J. Drake, United States National Museum, J. C. Lutz, and author's collections.

Distribution.—This species is apparently confined to Central America, northern South America and possibly the West Indies. Uhler's (1894) record from Grenada was based on specimens

of *saileri* and his (1893) record from St. Vincent Island also has been tentatively referred to *saileri.* Barber (1947) records *longiceps* from Cuba, but I have seen no specimens from there. From *barberi, longiceps* may be distinguished by the white color of the apical one-third of the third antennal segment and the presence of a pair of dark brown spots along each apical corial margin.

PACHYGRONTHA MINARUM Lethierry and Severin, 1894.

Atractophora bipunctata FALLOU, Le Naturaliste (2) 1 (1887) 68. (homonym of *bipunctata* Stål, 1865).

Pachygrontha minarum LETHIERRY and SEVERIN, Gen. Cat. Hemip. 2 (1894) 181. (New name.)

Coloration nearly uniform yellowish-brown; underside of fore femora, coxæ and longitudinal vitta on abdominal venter midway between meson and margin castaneous; apical margin of corium with a prominent black spot midway between apex and apex of clavus.

Clothed below with short sericeous hairs, above with only a few scattered hairs, these are longer on lateral margins of pronotum and on head; antennæ and legs clothed with long conspicuous hairs; punctures rather densely and uniformly distributed, dark brown and strongly contrasting with ground color.

Head rather broad, lateral margins nearly straight, jugal carinæ flanged or bent outward on posterior portion (Plate 3, fig. 7) length head, 1.31 mm (1.24 to 1.40); width across eyes, males, 1.18 mm (1.16 to 1.20); females, 1.28 mm (1.24 to 1.32); interocular space, 0.76 mm (0.70 to 0.80); pronotum little elevated, transverse impression weakly indicated or entirely absent, lateral margins moderately calloused and rounded, weak lævigate stripe extending along meson often becoming obsolete posteriorly, but present over entire meson of scutellum and often indicated on base of head, length pronotum, males, 1.55 mm (1.42 to 1.66); females, 1.72 mm (1.64 to 1.76); width pronotum, males, 1.77 mm (1.64 to 1.84); females, 2.00 mm (1.96 to 2.04); scutellum with a median lævigate line, no basal depression or transverse basal ridge; length, 1.19 mm (1.08 to 1.24); hemelytra with lateral margins straight, not at all expanded near apex of scutellum, distance apex clavus-apex corium, males, 1.82 mm (1.80 to 1.84); females, 2.15 mm (2.08 to 2.20); distance apex corium-apex abdomen, males, 1.71 mm (1.56 to 1.80); females, 2.16 mm, membrane just reaching or slightly exceeding apex of abdomen; labium reaching onto anterior one-third of

mesosternum, second segment just attaining anterior margin of prosternum; fore femora elongate, moderately incrassated, lacking a minor spine between the third and fourth major spines (from apex), length, males, 2.50 mm (2.40 to 2.68); females, 2.71 mm (2.64 to 2.84), basal tarsal segment longer than segments two and three combined; antennæ short and thickened, apical swelling of basal segment comprising about one-third of entire segment (Plate 3, fig. 9) segment four straight, length I, males, 2.53 mm (2.36 to 2.72); females, 2.64 mm (2.48 to 2.76); II, 1.68 mm (1.56 to 1.88); III, 1.37 mm (1.28 to 1.40); IV, 1.15 mm (1.04 to 1.24). Total length, males, 8.38 mm (7.84 to 8.96); females, 9.49 mm (9.36 to 9.80). Gonostylus as in Plate 2, fig. 6.

Deposition of type.—Unknown. Probably Paris Museum.

Material examined.—13 males, 10 females. BRAZIL: Manaos, Goyaz Province, Chapada; Palma, Goyza; Parana Province, Taquara; Matto Grosso Province, T. Guapore Rio Jamary; Para Province, Santarem. BOLIVIA: Province del Sara. PARAGUAY: Caagiuazu District (at light) Pastorea, Estancia Primera. Specimens in J. C. Lutz, N. A. Kormilev, United States National Museum; Stockholm Museum, R. F. Hussey, Carnegie Museum, J. C. Carvalho, Museum of Comparative Zoology (Harvard), and author's collections.

P. minarum was described from Minaes Gerais by Fallou and appears to be rather widely distributed in central South America. The species is closely related to *P. saileri* sp. nov. and together with the latter forms a distinct group within the genus characterized by the short, thick, antennæ that do not show sexual dimorphism, but actually because of the larger size, have females with longer antennæ than the males. *Minarum* is a larger, more elongate species than *saileri* with a proportionately longer head and pronotum.

PACHYGRONTHA SAILERI sp. nov.

Pachygrontha longiceps UHLER, Zool. Soc. Lond. Proc. (1893) 705. (?)

Pachygrontha longiceps UHLER, Zool. Soc. Lond. Proc. (1894) 85.

General coloration uniformly testaceous, becoming castaneous in area of coxæ; apical margin of corium with a black spot midway between corial apex and apex of clavus; fore femoral spines tipped with black.

Pubescence as in *P. minarum,* punctures light and not strongly contrasting with ground color.

Head short and broad, lateral margins nearly straight, jugal carinæ prominently bent laterad on posterior portion, length head, males, 1.18 mm (1.12 to 1.20); females, 1.27 mm (1.20 to 1.36); width across eyes, males, 1.17 mm (1.16 to 1.20); females 1.23 mm (1.20 to 1.24); interocular space, males, 0.78 mm (0.76 to 0.78); females, 0.84 mm (0.82 to 0.88); pronotum nearly flat, lateral margins slightly sinuate, transverse impression obsolete, median lævigate line obscurely indicated, length pronotum, males, 1.46 mm (1.40 to 1.50); females, 1.59 mm (1.48 to 1.68); width pronotum, males, 1.70 mm (1.68 to 1.76); females, 1.92 mm (1.84 to 2.00); scutellum with an obscure median lævigate line and weak but readily discernible basal depression, length scutellum, males, 1.08 mm (1.04 to 1.12); females, 1.17 mm (1.12 to 1.24); hemelytra with lateral margins straight, membrane reaching approximately to apex of abdomen, distance apex clavus-apex corium, males, 1.82 mm (1.76 to 1.84); females, 2.03 mm (1.96 to 2.16); distance apex corium-apex abdomen, males, 1.59 mm (1.52 to 1.68); females, 1.79 mm (1.64 to 2.00); labium extending posteriorly to near center of mesosternum, second segment attaining or slightly exceeding anterior margin of prosternum; fore femora moderately incrassate, bearing a minor spine between the third and fourth major spines (from apex), length, 2.34 mm (2.20 to 2.52); antennæ thick and short, with apical swelling occupying about one-third of total length of first segment (as in *minarum*), length I, males, 2.27 mm (2.16 to 2.44); females, 2.37 mm (2.32 to 2.48); II, males, 1.47 mm (1.44 to 1.48); females, 1.55 mm (1.48 to 1.64); III, 1.32 mm (1.28 to 1.40); IV, 1.12 mm (1.08 to 1.16). Total length, males, 7.91 mm (7.68 to 8.04); females, 8.79 mm (8.28 to 9.32).

Holotype.—Male, Balthazar (Windward Side), Grenada, W. I., *United States National Museum 61933 H. H. Smith* (P. R. Uhler Collection).

Paratypes.—4 males, 3 females, same data as holotype. Specimens in United States National Museum, British Museum, Vienna Museum, and author's collection.

This species is very closely related to the South American *minarum* and probably represents a derived species that has been reproductively isolated.

I take pleasure in dedicating this species to Dr. Reece I. Sailer of the United States National Museum for his unfailing courtesy and assistance to all students of the Hemiptera.

PACHYGRONTHA BARBERI sp. nov.

General coloration uniform brownish testaceous; mesal areas of thoracic venter, spotting on fore femora and broad vitta on abdominal venter midway between meson and margin and entire venter of posterior two pre-genital segments castaneous (the castaneous-brown coloration of the last two pregenital segments causes the mesal area of the abdominal venter anteriorly to appear as a large yellowish rectangle); a black spot present on apical margin of corium midway between apex of clavus and apex of corium.

Clothed below and on head with sparse, decumbent sericeous pile, pronotum with sparse hairs.

Head broad, jugal carinæ prominently produced, nearly straight, sometimes slightly bent outward on posterior portion (Plate 3, fig. 11) length head, 1.43 mm (1.32 to 1.52); width across eyes, 1.27 mm (1.18 to 1.36); interocular space 0.82 mm (0.76 to 0.88); pronotum with side margins nearly straigth, calloused, transverse impression very weakly indicated, median, lævigate line indistinctly represented, length pronotum, 1.92 mm (1.72 to 2.16); width pronotum, 2.08 mm (1.80 to 2.40); scutellum somewhat swollen near base, basal depression absent or weakly indicated, an indistinct lævigate median stripe present; length scutellum, 1.31 mm (1.28 to 1.36); hemelytra with lateral margins very slightly expanded near center of claval commissure, membrane reaching apex of abdomen, distance apex clavus-apex corium, 2.25 mm (2.04 to 2.56); distance apex corium-apex membrane, 2.12 mm (1.92 to 2.40); labium reaching onto mesosternum, second segment reaching or slightly exceeding anterior margin of prosternum; fore femora elongate, moderately incrassate, armed below with 5 to 6 major spines, length, 3.54 mm (3.20 to 4.00); antennæ very elongate and slender, clothed with conspicuously spreading hairs, apical swelling of first segment very short, (Plate 3, fig. 8) fourth segment only slightly curved, length I, males, 6.49 mm (5.00 to 8.00); females, 4.26 mm (3.88 to 4.68); II, males, 4.71 mm (3.52 to 5.64); females, 2.70 mm (2.40 to 2.92); III, males, 3.60 mm (3.04 to 4.16); females, 2.34 mm (2.00 to 2.88); IV, males, 1.84 mm; females, 1.51 mm (1.44 to 1.64). Total length, males, 9.86 mm (9.20 to 11.20); females, 10.46 mm (9.84 to 11.00). Gonostylus as in Plate 2, fig. 1.

Holotype.—Male, Morales, Guatemala, *United States National Museum 61934 J. J. White* (H. G. Barber Collection), July, 1928.

Paratypes.—6 males, 16 females; same data as the holotype. GUATEMALA: Morales. PANAMA: Trinidad River; Barro Colorado Island CZ., Los Santos (Tonosi). HONDURAS: Tela, Rio Claura. Specimens in United States National Museum, C. J. Drake, J. C. Lutz, U. Michigan Museum Zoology, Stockholm Museum, Hungarian National Museum, and author's collections.

Distribution:—Records of this large species are thus far confined to tropical Central America, but the species should occur in northern South America as well.

The variation in the above noted type series is of considerable magnitude as may be noted from the description. Specimens from Panama tend to run appreciably larger, however in specimens from the same collection nearly the entire range of variation may be observed indicating that probably a single species is involved. A pronounced sexual dimorphism of the antennæ is present. *Barberi* is most closely related to *grossa* sp. nov. Lack of males of the latter species makes it difficult to define proportional differences that will cover both sexes of the two species, but as indicated in the key the lack of a black spot on the corial apex will distinguish *grossa* from the present species.

I take pleasure in dedicating this new species to Mr. H. G. Barber our outstanding specialist of the Lygæidæ who has always given enthusiastic and authoritative help on the numerous occasions that I have asked his assistance.

PACHYGRONTHA GROSSA sp. nov.

General coloration rich light brown, becoming castaneous on under side of fore femora and dorsal spotting of same, thoracic venter, coxæ, area of ovipositor, claws and a longitudinal vitta on abdominal venter midway between meson and margin; apical margin of corium immaculate, lacking black spots.

Clothed below with very short sparse sericeous setæ, nearly glabrous above, head with a few scattered hairs; punctures coarse and dark brown, strongly contrasting with ground color.

Head large and broad, lateral margins nearly straight, jugal carinæ prominently produced, nearly straight, not bent strongly outward on posterior half; length head, 1.64 to 1.72 mm; width across eyes, 1.38 to 1.46 mm; interocular space, 0.88 to 0.94 mm; pronotum slightly convex, lateral margins sinuately rounded, calloused, transverse impression very feebly indicated, a weak median lævigate line present, length pronotum, 1.76 to 1.96 mm;

width pronotum, 2.00 to 2.20 mm; scutellum with a weak median line, lacking a basal depression, length, 1.32 to 1.44 mm; hemelytra with lateral margins slightly expanded midway on claval commissure, membrane not quite reaching apex of abdomen, distance apex clavus-apex corium, 2.25 to 2.28 mm; distance apex corium-apex abdomen, 2.28 to 2.36 mm; labium with second segment exceeding anterior margin of prosternum, labium extending caudad almost to mesocoxæ; fore femora elongate, moderately incrassate, armed below with 5 to 6 major spines, length, 3.24 to 3.56 mm, basal tarsal segment subequal to segment two and three together; antennæ with first segment elongate and slender, lacking prominent hairs, apical swelling comprising only one-sixth of total length of segment, segments, two, three and four missing. Total length, 10.00 to 11.00 mm.

Holotype.—Female, Chapada, Brazil. May. Acc. No. 2966. Carnegie Museum.

Paratype.—1 female, same data as holotype, August. Author's collection.

This large species is most closely related to *P. barberi* sp. nov. It is the only member of the genus in the Western Hemisphere that lacks black spots on the apical margin of the corium. The male is unknown, but probably the species will show considerable sexual dimorphism of the antennæ.

PACHYGRONTHA ŒDANCALODES ŒDANCALODES Stål, 1874.

Pachygrontha œdancalodes STÅL, Enum. Hemip. 4 (1874) 139–140.
Pachygrontha œdancaloides DISTANT, Centr. Amer. Heter. Biol. 1 (1882–1893) 199, 393.
Pachygrontha œdancalodes UHLER, Calif. Acad. Sci. Proc. (2) 4 (1894) 240.
Pachygrontha œdancaloides LETHIERRY and SEVERIN, Gen. Cat. Hemip. 2 (1894) 181.
Pachygrontha œdancalodes TORRE BUENO, Ent. Amer. 26 (1946) 55.
Œdancala œdancaloides BARBER, Soc. Cubana Hist. Nat. Mem. 19 (1947) 74.

General coloration testaceous; a pair of spots along apical margin of corium, spot at center of margin often diffusing into a blotched irregular area, second spot at apex, longitudinal dash on basal angles of pronotum, longitudinal vitta midway between meson and margin of female venter, thoracic sterna mesally, fourth antennal segment, basal two-thirds of third antennal segment, terminal labial segment, spots, on femora, those on fore femora very thickly placed becoming coalesced ventrad, brown to blackish; head sometimes darker almost

castaneous; first two antennal segments testaceous, apical one-third of segment three white; punctures dark brown; pronotum with a lævigate median stripe nearly reaching basal mragin, lateral pronotal margins whitish-yellow and calloused.

Clothed below with decumbent sericeous pile, above nearly glabrous, except head, but with scattered long hairs on head, pronotum and appendages, much as in *compacta*.

Head elongate, moderately narrowed cephalad clypeus strongly declivent, jugal carinæ nearly straight, length head, 0.94 mm (0.88 to 1.00); width across eyes, 0.92 mm (0.88 to 0.96); interocular space, 0.56 mm (0.52 to 0.60); pronotum moderately narrowed cephalad, lateral margins sinuate, transverse impression prominent (less so in some females including the holotype), area of calli moderately convex, length pronotum, 1.19 mm (1.08 to 1.32); width pronotum, 1.62 mm (1.52 to 1.78); scutellum with well marked light median carinæ, length, 0.87 mm (0.80 to 0.92); hemelytra with corial margin slightly expanded just caudad of apex of scutellum, membrane exceeding apex of abdomen; distance apex clavus-apex corium, 1.00 mm (0.92 to 1.12); distance apex corium-apex membrane, 1.29 mm (1.20 to 1.36); labium reaching anterior portion of mesosternum, first segment long, extending caudad of base of antennæ, second segment exceeding anterior margin of prosternum by about one-half its length; fore femora armed below with 5 to 7 nearly equally large spines, making differentiation into major and minor spines impractical, fore femora relatively slender; length, 1.78 mm (1.64 to 1.92); antennæ slender and filiform, basal segment abruptly enlarged near apex, apical segment fusiform not at all curved, length I, male, 1.78 mm (1.48 to 2.00); female, 1.53 mm (1.44 to 1.72); II, males, 1.27 mm (1.04 to 1.40); females, 1.08 mm (1.00 to 1.20); III, males, 1.08 mm (0.92 to 1.18); females, 1.01 mm (0.88 to 1.16); IV, 0.69 mm (0.64 to 0.72). Total length, 5.56 mm (5.20 to 6.00). Gonostylus as in Plate 2, fig. 5.

Deposition of type.—Stockholm Museum.

Material examined.—Holotype female, Mexico.

Paratypes.—7 males, 10 females, GUATEMALA: Quirigua. MEXICO: La Buena Ventura (Vera Cruz), Cordova, Chapulhucan (Hidalgo), Jalapa, Fontera Tabasco, Apatzingan (Michoacan). PANAMA: Summit CZ, Paraiso CZ, Frijoles CZ, Barro Colorado Island CZ, Panama City.

Specimens in Carnegie Museum, Hungarian National Museum, Iowa State College, Chicago Natural History Museum, United States National Museum, Stockholm Museum, C. J. Drake, U. Michigan Museum Zoology, and author's collections.

Distribution.—This subspecies is known at present from Mexico and Central America, but may be expected to occur in northern South America and to intergrade there with *carvalhoi* sp. nov.

There is moderate gradation in size in the series before me, Mexican specimens tending to run larger. The clavus may be extensively darkened and occasionally obscure longitudinal striping is apparent on the posterior lobe of the pronotum.

Barber (1947) placed *œdancalodes* in the genus *Œdancala*. For reasons discussed in more detail in the generic discussion of the genus *Œdancala* the species appears to actually belong to *Pachygrontha*.

PACHYGRONTHA ŒDANCALODES CARVALHOI subsp. nov.

General appearance much as in typical *œdancalodes*, tendency for diffusion of median spot along apical margin of corium more evident; transverse pronotal impression deep, anterior lobe of pronotum more strongly arched than in nominal subspecies, membrane reaching but not exceeding apex of abdomen, the latter more evenly tapered than in typical *œdancalodes*.

Head, length, 0.87 mm (0.86 to 0.88); width across eyes, 0.90 mm (0.88 to 0.92); interocular space, 0.57 mm (0.54 to 0.60); pronotum, length, male, 1.16 mm; female, 1.20 mm (1.16 to 1.24); width pronotum, male, 1.56 to 1.60 mm; female, 1.65 mm (1.60 to 1.68); scutellum, length, 0.81 mm (0.76 to 0.84); hemelytra with distance apex clavus-apex corium, 0.91 mm (0.86 to 0.96); distance apex corium-apex membrane, male, 1.08 mm; female, 1.15 mm (1.12 to 1.20); fore femora, length, male, 1.44 to 1.48 mm; female, 1.58 mm (1.52 to 1.68); antennæ, length (females) I, 1.29 mm (1.24 to 1.36); II, 0.94 mm (0.92 to 0.96); III, 0.87 mm (0.80 to 0.92); IV, 0.68 mm (0.64 to 0.72). Total length, male, 4.76 to 4.80 mm; female, 5.12 mm (4.96 to 5.40).

Holotype.—Female, Chapada, Brazil, Acc. No. 2966, April. (Carnegie Museum).

Paratypes.—3 Males, 3 females, same data as holotype. BRAZIL: Covanca, D. Federal; Petropolis. URUGUAY: Montevideo. In British Museum, C. J. Drake, J. C. Carvalho, and author's collections.

This new subspecies differs from typical *œdancalodes* in having the pronotal length greater than the distance from apex of corium to apex of membrane; averaging noticeably smaller in size, possessing shorter anterior femora and in the females in having proportionately shorter antennal segments. Unfortunately none of the male paratypes have antennal segments present. This subspecies probably will be found to intergrade with the nominal form in northern South America. At present it is known only from Brazil and Uruguay.

I take pleasure in dedicating this subspecies to our outstanding student of the Miridæ, Dr. J. C. M. Carvalho of Brazil.

PACHYGRONTHA COMPACTA Distant, 1893.

Pachygrontha compacta DISTANT, Centr. Amer. Heter. Biol. 1 (1893) 393.
Pachygrontha compacta LETHIERRY and SEVERIN, Gen. Cat. Hemip. 2 (1894) 180.
Pachygrontha compacta OSBORN and DRAKE, Ohio Nat. 15 (1915) 537.
Pachygrontha compacta TORRE BUENO, Ent. Amer. 26 (1946) 55.

General coloration testaceous, shading to light castaneous; base of scutellum, a pair of spots along apical margin of hemelytra, one at apex, second midway between apex and inner apical angle, sometimes obscure longitudinal stripes on either side of pronotal meson and another obscure stripe midway between meson and lateral margin on abdominal venter and pleura, mesal area of meso- and metasternum and spots on femora and tibiæ, dark brown to black; markings often castaneous on legs and venter; pronotum and scutellum with a pale lævigate median vitta, becoming obsolete on posterior pronotal lobe.

Coarsely and densely punctured, clothed below with decumbent, sericeous pile; head, pronotal and abdominal margins, antennæ, labium and legs bearing scattered elongate setae, these very prominent on head.

Head elongate, tapering, slightly declivent, jugal carinæ low, inconspicuous, nearly straight; length head, 0.85 mm (0.80 to 0.92); width head across eyes, 0.82 mm (0.76 to 0.88); interocular space, 0.50 mm (0.48 to 0.56); pronotum strongly narrowing cephalad, lateral margins sinuate, transverse impression prominently developed to separate pronotum into a conspicuously distinct anterior and posterior lobe of subequal length, the anterior lobe convex, sloping laterad, length pronotum, 0.97 mm (0.88 to 1.12); width pronotum at base, 1.37 mm

(1.24 to 1.52); scutellum with a strong basal depression and a weak median carina, length scutellum, 0.69 mm (0.64 to 0.76); hemelytra with corial margin sinuate, expanded caudad of apex of scutellum and exceeding the feebly expanded abdominal connexivum, membrane reaching or barely exceeding apex of abdomen, distance apex clavus-apex corium, 0.80 mm (0.72 to 0.92), distance apex corium-apex membrane, 0.88 mm (0.76 to 1.00); labium attaining anterior area of mesosternum, the second segment reaching or barely exceeding anterior margin of prosternum; fore femora moderately incrassate, all fore femoral spines larger and distinction into major and minor spines scarcely applicable, length fore femora, 1.36 mm (1.28 to 1.48); antennæ slender, filiform, basal segment rather suddenly enlarged about 0.35 mm from apex, apical segment fusiform and nearly straight, length I, males, 1.18 mm (1.04 to 1.28); females, 1.05 (0.92 to 1.20); II, males, 0.82 mm (0.72 to 0.88); females, 0.73 mm (0.68 to 0.84); III, 0.62 mm (0.52 to 0.68); IV, 0.50 mm (0.48 to 0.56). Total length, 4.40 mm (4.00 to 4.80).

Deposition of type.—British Museum.

Material examined.—8 males, 11 females. PANAMA: Summit, Pedro Miguel (CZ), Los Santos (Tenosi), Panama City. HONDURAS: Tegucigalpa, La Ceiba. BRITISH HONDURAS: Punta Gorda, San Antonio. TRINIDAD; BRAZIL; GRENADA, W.I.: Granville. TEXAS. Specimens in United States National Museum, Vienna Museum, Stockholm Museum, U. Michigan Museum Zoology, J. C. Lutz, C. J. Drake, and author's collections.

This little species, the smallest of the genus, is found throughout Central America and into the West Indies and South America. In the United States the first authentic record appears to be a female specimen collected by D. E. Hardy at Laguna Madre, 25 miles southeast of Harlingen, Texas. In the United States National Museum is a specimen intercepted at Galveston, Texas, on bananas from Honduras.

There is some color variation in the series before me, particularly in the intensity of the dark markings on the pronotum, which area varies from entirely pale testaceous to nearly complete longitudinal striping. The Texas specimen noted above has the calli almost completely darkened.

Compacta is most closely related to *œdancalodes* Stål. These two species form a very distinct group within the genus and are in some respects transitional between *Pachygrontha* and

Œdancala. However, I am unable to concur with Mr. Barber's statement that these two species should belong to *Œdancala*. The shape of the eye in particular relates these species to the more elongate members of the genus. (See *Œdancala* discussion).

In addition to the characters given in the key *compacta* may be distinguished from *œdancalodes* by the smaller size, less prominent color pattern, shorter relative distance from apex of corium to apex of membrane, less conspicuously calloused pronotal margins and broader apex of the gonostylus. Plate 2, fig. 10).

PACHYGRONTHA PARVULA Barber, 1923.

Pachygrontha parvula BARBER, Amer. Mus. Novit. 75 (1923) 4.
Pachygrontha parvula WOLCOTT, Agri. Univ. Puerto Rico Journ. 20 (1936) 168.
Pachygrontha parvula BARBER, Sci. Surv. P.R. and Virgin Is. I 14 (1939) 348.
Pachygrontha parvula RAMOS, Agri. Univ. Puerto Rico Journ. 30 (1946) 27.
Pachygrontha parvula WOLCOTT, Agri. Univ. Puerto Rico Journ. 32 (1950) 204.

Specimens of this species have not been available for study. Mr. Barber in his original description related it to *P. bimaculata* Distant and if this relationship is true the species may belong in the genus *Œdancala* to which *bimaculata* belongs. From the description, however, *parvula* appears to be most closely related to *P. compacta* Distant being of the same size and agreeing in many structural characteristics. *Parvula* is said to have the pronotal length nearly as great as the width, whereas in *compacta* the width is considerably greater than the length. *Parvula* has the pronotum "much less than half the length of the corium" while in *compacta* the length of the pronotum is about one-half the corial length. In *compacta* the third antennal segment is less than one-third shorter than segment two, *parvula* is said to have the third segment one-third shorter. The two species are probably very closely related and *parvula* will very probably run to *compacta* in my key.

PACHYGRONTHA BAKERI sp. nov.

General coloration dull testaceous; calloused yellow markings along lateral margins of pronotum, central stripe on anterior pronotal lobe and medially on scutellum; marked with chocolate-brown as follows: clavus, medially on corium, this expanding caudally and terminating broadly along central region of api-

cal corial margin, membrane, caudo-lateral angles of pronotum, sides of head anterior to antennal bases, apical swelling of first antennal segment, fourth segment, central portion of thorax below; abdominal venter, coxæ, fore-femora, the latter spotted above, and with diffused spotting on middle and hind femora, castaneous; tips of fore-femoral spines and claws black; apical margin of corium lacking dark spots, but the central area broadly darkened by the chocolate-brown stripe that extends longitudinally through the middle of the corium; apical one-fourth of third antennal segment white.

Deeply punctured above; clothed below and on head with short decumbent, sericeous pile, nearly glabrous above.

Head broad, little tapered anteriorly, jugal carinæ moderately elevated and straight, length head, 1.04 mm (0.92 to 1.12); width across eyes, 1.18 mm (0.99 to 1.17); interocular space, 0.68 mm (0.64 to 0.78); pronotum with lateral margins moderately sinuate, transverse constriction shallow and often nearly obsolete, possessing a median lævigate stripe mesally on anterior lobe, lateral margins lævigate, calloused, length pronotum, 1.63 mm (1.42 to 1.85); width pronotum, 1.79 mm (1.63 to 2.13); scutellum with a weak median lævigate calloused stripe, becoming somewhat tumid at apex, basal depression obsolete or absent, length scutellum, 1.07 mm (0.99 to 1.21); hemelytra with lateral corial margins nearly straight, slightly expanded about midway along claval suture, apical corial margin noncalloused, membrane reaching onto base of last abdominal tergite in males, often attaining apex of abdomen in females, distance apex clavus-apex corium, 1.50 mm (1.35 to 1.76); distance apex corium-apex abdomen, 1.97 mm (1.80 to 2.20); labium short, barely attaining anterior region of mesosternum; fore femora relatively slender, armed below with four major spines, length, 2.96 mm (2.49 to 3.44), basal tarsal segment longer than segments two and three combined; antennæ slender, filiform, apical segment moderately curved, length I, males, 5.27 mm (4.24 to 6.12); females, 3.23 mm (2.70 to 3.48); II, males, 3.77 mm (3.28 to 4.36); females, 2.17 mm (1.85 to 2.48); III, males, 2.59 mm (2.36 to 2.92); females, 1.68 mm (1.49 to 1.92); IV, males, 1.07 mm (0.92 to 1.12); females, 0.94 mm (0.90 to 99). Total length, 7.86 mm (6.89 to 8.80).

Holotype.—Male. Mt. Maquiling, Luzon, Philippines. Alt. 40 meters. In *United States National Museum 61930* (*P. Clemte*), March 10, 1947.

Paratypes.—34 males, 62 females. PHILIPPINES: Luzon, Mt. Maquiling; Los Baños; Mt. Banahao; Malinao, Tayabas. Mindanao, Surigao; Butuan, Lawa. Paete Island, Negros Island, Cuernos Mts.; Biliran Island; Mindoro Island, Baco River. Specimens in United States National Museum, University of the Philippines, British Museum, Stockholm Museum, Hungarian National Museum, Vienna Museum, J. C. Lutz, Chicago Natural History Museum, So. Australian Museum, Carnegie Museum, Museum of Comparative Zoology (Harvard), H. M. Harris, and author's collections.

This appears to be the commonest member of the genus in the Philippines, a very extensive series being present from Mt. Maquiling, Luzon. The species is remarkably constant in color pattern, but shows considerable size variation even from a single locality. The antennal length is strikingly variable in total length, but not so in ratio to other body parts and as noted in the description the species shows striking sexual dimorphism. This is the nominal species of what I consider the *bakeri* group composed of *miriformis, semperi, b. gracilis, harrisi, vidua, longicornis,* and *carinata.*

Bakeri is closely related to *harrisi* from the New Guinea area, but may readily be distinguished by the uniform presence of 4 major spines on the fore femora and other characters as noted in the key.

It was at first perplexing to find that Stål had apparently not described this common species. However, in the Stål material from Stockholm Museum is a male specimen of *bakeri* from the Philippines collected by Semper and labeled *Pachygrontha* sp. This specimen is somewhat damaged and Stål apparently thus refrained from describing it.

I take pleasure in dedicating this species to the late C. F. Baker who collected so assiduously throughout the Philippine Archipelago and who brought together the largest existing collection of Oriental Pachygronthinæ.

PACHYGRONTHA BAKERI GRACILIS subsp. nov.

General coloration similar to *P. b. bakeri,* but dark chocolate-brown areas more extensive, covering all of pronotum and head with exception of central pale-yellow stripe, all of fore femora and entire hemelytra with exception of a broad lateral pale stripe and greater portion of thoracic area ventrally; abdominal venter, apical one-half of middle and hind femora

and antennæ castaneous; apical one-third of third antennal segment white to testaceous, apical corial margin lacking spots, but central area broadly diffused with chocolate-brown corial marking as in *b. bakeri.*

Pubescence and punctures as in *b. bakeri.*

Head broad and prominent only slightly tapering anteriorly, jugal carinæ moderately produced, straight, length of head, 1.32 mm; width across eyes, 1.24 to 1.28 mm; interocular space, 0.74 to 0.76 mm; pronotum conspicuously swollen or convex, transverse depression prominent, lateral margins feebly calloused and lævigate, a prominent median lævigate calloused stripe scarcely reduced on posterior pronotal lobe, length pronotum, 1.84 to 1.92 mm; width pronotum, 1.96 to 2.08 mm; scutellum with a low obsolete median carina, basal depression absent or very faintly indicated, length scutellum 1.40 mm; hemelytra with lateral margins nearly straight, slightly expanded near posterior end of claval suture, apical corial margin non-calloused, membrane reaching base of last abdominal tergite, distance apex clavus-apex corium, 1.77 to 2.48 mm; distance apex corium-apex abdomen, 2.84 mm; labium reaching caudad onto anterior portion of mesosternum; fore femora relatively elongate and slender, armed below with four or five major spines, length fore femora, 4.12 to 4.36 mm, basal tarsal segment longer than segments two and three combined; antennæ very slenderly filiform, greatly elongated, apical swelling of basal segment relatively slender, fourth segment strongly curved, length antennal segments I, 7.52 to 8.00 mm; II, 5.08 to 6.00 mm; III, 3.60 to 4.32 mm; IV, 1.49 mm. Total length, 9.80 to 10.20 mm.

Holotype.—Male. Cuernos Mts., Negros, Philippines. *United States National Museum 61931* (*Baker*).

Paratype.—Male. Samar Island, Philippines. (Baker) author's collection.

This slender elongate race is closely related to *bakeri.* It is most readily distinguished by the greatly elongated antennæ, dark coloration on the pronotum and the convex nature of the latter as well as the castaneous apical portions of the middle and hind femora. The gonostyli are of the *bakeri* type.

PACHYGRONTHA CARINATA sp. nov.

Coloration basically as in *bakeri,* but chocolate-brown darkened areas less extensively developed, generally paler over dorsal surface, giving species a more testaceous appearance; lateral

margins of pronotum prominently pale yellow; median yellow stripe of pronotum obsolete anteriorly and on posterior lobe; scutellum with median yellow stripe widening into t-shaped vitta near base.

Head nearly straight, jugal carinæ greatly enlarged and produced cephalad of strongly down curved clypeus, these carinæ slightly in-curved anteriorly, length head, male, 1.19 mm (1.14 to 1.21); female, 0.91 mm (0.85 to 0.99); width head, male, 1.20 mm (1.14 to 1.28); female, 1.10 mm (1.04 to 1.14); interocular space male, 0.74 mm (0.71 to 0.78); female, 0.67 mm (0.64 to 0.71); pronotum nearly as long as wide, lateral margins almost straight, strongly calloused, transverse impression absent or very slightly indicated, punctures large and spaced as in *bakeri*, length pronotum, male, 1.80 mm (1.64 to 1.92); female, 1.54 mm (1.49 to 1.63); width pronotum, male, 1.86 mm (1.72 to 1.96); female, 1.70 mm (1.64 to 1.80); scutellum with a weakly calloused median carina, basal depression obsolete, length scutellum, male, 1.21 mm (1.07 to 1.35); female, 1.05 mm (0.92 to 1.14); hemelytra with lateral corial margin almost straight throughout, apical corial margin non-calloused, or very weakly so near apex, membrane reaching onto base of last abdominal tergite in males, nearly attaining apex of abdomen in females, distance apex clavus-apex corium, males, 1.75 mm (1.56 to 1.84); females, 1.53 mm (1.42 to 1.56); distance apex corium-apex abdomen, males, 2.59 mm (2.13 to 2.91); female, 1.87 mm (1.78 to 1.92); labium short, barely exceeding fore coxæ; fore femora long and slender, armed below with four major pale, black-tipped spines, length, male, 3.58 mm (3.20 to 3.83); female, 2.59 mm (2.41 to 2.77); basal tarsal segment longer than segments two and three combined; antennæ very long and slenderly filiform, terminal segment moderately curved, length I, male, 6.58 mm (5.68 to 7.38); female, 3.06 mm (2.80 to 3.41); II, male, 4.76 mm (4.00 to 5.32); female, 2.00 mm (1.85 to 2.20); III, male, 3.18 mm (2.77 to 3.48); female, 1.54 mm (1.44 to 1.68); IV, male, 1.17 mm (1.14 to 1.21); female, 0.92 mm (0.84 to 0.99). Total length, male, 9.13 mm (8.31 to 10.01); female, 7.46 mm (7.03 to 7.95).

Holotype.—Male. Dapitan, Mindanao, Philippines. *United States National Museum 61929 (Baker).*

Paratypes.—6 males, 4 females. PHILIPPINES: Mindanao, Dapitan, Kolambugan, Iligan. Specimens in United States National Museum, British Museum, and author's collections.

This elongate, slender species is at present known only from Mindanao and may readily be distinguished by the enlarged, forward produced and bluntly rounded jugal carinæ. Striking sexual dimorphism exists in this species, the males being considerably larger in all respects and having the jugal carinæ usually more strongly produced.

PACHYGRONTHA MIRIFORMIS Breddin, 1905.

Pachygrontha miriformis BREDDIN, Mitt. Naturhist. Mus. (Hamburg) 22 (1905) 213–4.

Pachygrontha bicornuta BANKS, Philip. Jour. Sci. § A 4 (1909) 574. (*Fig.*).

Pachygrontha miriformis BERGROTH, Philip. Jour. Sci. 13 (1918) 72.

General coloration testaceous-brown, suffused with dark brown; lateral margins of hemelytra light testaceous; a suffused stripe extending anteriorly from middle of apical margin of corium, spot on extreme apex of corium, patch on caudo-lateral pronotal angles, apical swelling of first antennal segment, thoracic venter mesad, profuse spotting on femora and tibiæ and underside of fore femora, castaneous; longitudinal vitta on abdominal venter, midway between meson and margin chocolate brown; first and second antennal segments and abdominal venter pale yellow, basal two-thirds of third segment and all of fourth light brown, apical one-third of third segment white.

Clothed below with sparse decumbent sericeous pile, above nearly glabrous, with a few short hairs, antennæ clothed with short, inconspicuous hairs.

Head rather narrow, lateral margins straight, jugal carinæ greatly produced anteriorly into a pair of downcurved pointed spines, that extend (Plate 3, fig. 7) cephalad of the apex of the clypeus, length head, 0.92 mm, width across eyes 1.04 mm, interocular space, 0.64 mm; pronotum with lateral margins nearly straight, strongly and evenly narrowing cephalad, calli evident, transverse impression weakly indicated, lævigate median stripe prominent on anterior half, absent on posterior, length pronotum, 1.44 mm, width pronotum, 1.64 mm; scutellum with a conspicuous pale median stripe, basal depression very faintly indicated, length scutellum, 0.96 mm; hemelytra with lateral margins somewhat widened about midway of claval commissure, apical margin of corium non-calloused, membrane reaching apex of abdomen, distance apex clavus-apex corium, 1.40 mm, distance apex corium-apex abdomen, 1.72 mm; labium, length undetectable (glued), second segment reaching anterior margin of

prosternum; fore femora slender, armed below with four major spines, lacking a minor spine between the third and fourth major spines (from apex), length, 2.40 mm; antennæ very slender, filiform, apical swelling of first segment comprising less than one-fourth of length of segment, terminal segment straight, length I, 2.76 mm; II, 2.00 mm; III, 1.56 mm; IV, 0.92 mm. Total length, 7.32 mm.

Deposition of type.—Deutsches Entomologische Institut.

Lectotype.—Female, Banguey b. Borneo (Coll. Breddin). This female specimen described above is almost unquestionably from the type series. Breddin mentions "females" in the beginning of his original description necessitating the lectotype designation.

Deposition of type.—P. bicornuta Banks: Destroyed (Bureau of Science, Manila). (?)

Distribution.—Known only from Banguey island off the north coast of Borneo and Palawan, Philippines.

This is a very distinct species by reason of its greatly enlarged and acutely produced jugal carinæ. It is a member of the *bakeri* group that is widely distributed through the western Pacific.

Bergroth (1918) synonymized Banks' *bicornuta* from Iwahig, Palawan with *miriformis*. A female specimen in the British Museum from Binaluan, North Palawan agrees very closely with the lectotype of *miriformis*. In this specimen the jugal carinæ are even more prominently produced and the specimen is slightly larger (7.92 mm). This specimen agrees rather well with Banks' original description differing in that the pronotum is slightly wider than long, rather than "nearly one-fourth longer than broad at base," however, this character is often somewhat of an optical illusion, the pronotum to most observers appearing longer than wide in many species that are not so formed. I have found many types that have this character incorrectly stated. Banks also notes that his specimens measured 9 mm, somewhat larger than the specimens examined. In general however they appear to represent the same species as that described earlier by Breddin and I have little hesitation in following Bergroth in considering *bicornuta* Banks a synonym of *miriformis* Breddin.

PACHYGRONTHA HARRISI sp. nov.

General coloration similar to *bakeri* and *vidua*, chocolate-brown markings usually restricted to mesal half of clavus;

membrane with brown stripes between the veins; third antennal segment with apical white portion pronounced, usually including more than one-third of entire length of segment; lateral pronotal margins strongly calloused, yellow; lævigate, calloused central pronotal stripe entire or nearly so, as is the scutellar central carina; abdominal venter, spotting on femora and antennæ castaneous; lateral portion of corium broadly pale, apical margin lacking distinct spots, but central area strongly diffused with brown as in most of the *bakeri* group; clothed below with appressed, sericeous pile, possessing very short, sparse hairs above.

Head appearing slightly more convex than in *bakeri,* length head, 0.93 mm (0.88 to 1.08); width across eyes, 1.06 mm (0.99 to 1.14); interocular space, 0.61 mm (0.56 to 0.66); pronotum with lateral margins nearly straight, strongly calloused, transverse impression shallow, but plainly evident, pronotal punctures much more numerous and closely spaced than in *bakeri,* length pronotum, 1.50 mm (1.32 to 1.72); width pronotum, 1.76 mm (1.52 to 1.92); scutellum with a prominent yellow median carina, this little tumid at apex, basal depression obsolete, length scutellum, 1.10 mm (1.00 to 1.24); hemelytra with lateral corial margins nearly straight, slightly expanded near middle area of claval suture, membrane reaching onto last abdominal tergite in males, usually attaining apex of abdomen in females, distance apex clavus-apex corium 1.68 mm (1.52 to 1.85), distance apex corium-apex abdomen, males, 2.48 to 2.56 mm; females, 1.89 mm (1.84 to 1.99), apical corial margin non-calloused; labium extending only onto anterior portion of mesosternum, barely exceeding the front coxæ; fore femora relatively elongate and slender, armed below with five major black-tipped spines, length fore femora, males, 3.50 mm (2.96 to 3.88); females, 2.79 mm (2.57 to 2.98); antennæ slender, filiform, terminal segment curved, length I, males, 6.05 mm (4.56 to 7.24); females, 3.94 mm (3.56 to 4.44); II, males 4.20 mm (3.04 to 5.12); females, 2.42 mm (2.12 to 2.60); III, males, 2.92 mm (2.40 to 3.52); females, 2.01 mm (1.76 to 2.16); IV, 1.08 mm (1.00 to 1.24). Total length, males, 8.32 mm (7.40 to 9.00); females, 7.37 mm (7.10 to 7.67).

Holotype.—Male. Dobba Aru Island. May 3, 1939. (R. G. Wind). H. M. Harris collection.

Paratypes.—6 males, 8 females. DOBBA ARU ISLAND. GUADALCANAL ISLAND, Solomons. NEW GUINEA: Krisa, Erima,

Astrolabe B., Fak Fak, Torricelli Mts., Hollandia, Friedrich-Wilh.Hafen. (?) Specimens in H. M. Harris, United States National Museum, Stockholm Museum, Hungarian National Museum, British Museum, South Australian Museum, and author's collections.

This typical member of the *bakeri* group is most closely related to *bakeri* itself and is chiefly distinguishable by the possession of 5 instead of 4 major spines on the fore femora and the much more closely spaced punctures on the pronotum. The number of femoral spines is not entirely constant, only four spines being present in two females, one from Dobba Aru Island, the other from New Guinea proper, however in 17 specimens examined all but the two noted above possess 5 major spines; whereas in the long series of nearly 100 specimens of *bakeri* from the Philippines, not a single specimen possesses 5 spines.

From the distributional pattern the species described by Montrouzier from New Caledonia as *Dilophus solieri* might possibly be this species, but lacking specimens from New Caledonia it is impossible from the general description to make identification with Montrouzier's species possible.

I take pleasure in dedicating this species to Professor H. M. Harris of Iowa State College for his many important contributions to our knowledge of the Hemiptera.

PACHYGRONTHA VIDUA Horvath, 1900.

Pachygrontha vidua HORVATH, Denk, med.-nat. Ges. (Jena) **8** (1900) 638.

General coloration cinereous mixed with testaceous; conspicuously marked with reddish brown on head, pronotum and inner half of clavus; apical margin of corium with a prominent brown spot at apex and another midway along apical margin; scutellum with a median pale yellow stripe diverging basally into a pair of raised callosities; extreme base of scutellum and caudo-lateral pronotal angles black; antennae testaceous with apical swelling of first segment castaneous, apical one-third to one-half of third segment white and terminal segment chocolate-brown; clothed below and on head with decumbent, sericeous pile, scutellum and lateral pronotal margins bearing scattered semi-erect hairs; punctures relatively small and evenly spaced.

Head moderately declivent, jugal carinæ low and straight, head slightly widened from base to apex of antenniferous tubercles, length head, 1.12 mm (1.00 to 1.14); width across eyes, 1.12 mm (1.02 to 1.20), interocular space, 0.66 mm (0.62 to 72); pronotum very strongly tapering anteriorly, lateral margins sinuate, narrowly calloused, transverse constriction shallow but prominent, posterior lobe very prominently convex, length pronotum, 1.72 mm (1.52 to 2.00); width pronotum, 1.96 mm (1.72 to 2.32); scutellum with a prominent median carina diverging into paired callosities near base, basal depression moderately deep, length scutellum, 1.16 mm (1.00 to 1.32); hemelytra with distance apex clavus to apex corium, 1.65 mm (1.28 to 1.92); distance apex corium to apex abdomen, 1.92 mm (1.80 to 2.12); labium reaching anterior portion of mesosternum, second segment slightly exceeding base of head; fore femora very elongate and slender, armed below with five major spines, length males, 3.63 mm (3.12 to 4.28); females, 2.87 mm (2.68 to 3.24); antennæ very elongately and slenderly filiform, apical swelling on first segment small, terminal segment nearly straight, length I, males, 6.18 mm (5.12 to 7.40); females, 3.57 mm (3.08 to 4.24); II, males, 4.26 mm (3.44 to 4.68); females, 2.33 mm (2.04 to 2.96); III, males, 3.00 mm (2.56 to 3.20); females, 1.81 mm (1.76 to 1.96); IV, males, 1.18 mm (1.16 to 1.20); females, 1.04 mm (1.00 to 1.08). Total length, males, 8.86 mm (7.40 to 9.80); females, 7.94 mm (7.32 to 9.20).

Deposition of type.—Hungarian National Museum.

Material examined.—Holotype; female, NEW GUINEA. (R. Semon). 12 males, 12 females: NEW GUINEA, Huon Gulf, Simbang, Sattelberg; Wako Rey, Mt. Gyifrie 1,000 feet, Wareo Finsch Haven, Krisa Vanimo, Finsch Haven. Specimens in Hungarian National Museum, South Australian Museum, British Museum, United States National Museum, and author's collections.

This species appears to be confined in distribution to New Guinea where it is sympatric with *harrisi* sp. nov. to which species it is closely related. *P. vidua* may readily be separated from *harrisi* by the black markings on the caudo-lateral angles of the pronotum, the brown spot at the apex of the corium and in the females by having the pronotal width equal to or greater than the length of the third antennal segment. The gonostyli (Plate 2, fig. 2) are typical of the *bakeri* group.

PACHYGRONTHA SEMPERI Stål, 1870.

Pachygrontha semperi STÅL, Oefv. Vet. Ak. Forh. (1870) 661.
Pachygrontha brevicornis STÅL, Oefv. Vet. Ak. Forh. (1870) 662. (New synonymy.)
Pachygrontha semperi STÅL, Enum. Hemip. 4 (1874) 140.
Pachygrontha brevicornis STÅL, Enum. Hemip. 4 (1874) 140.
Pachygrontia (sic) *semperi* LETHIERRY, Mus. Civico Storia Nat. Genova Ann. (2) 6 (1889) 462.
Pachygrontha brevicornis LETHIERRY and SEVERIN, Gen. Cat. Hemip. 2 (1894) 180.
Pachygrontha brevicornis HORVATH, Denk. Med. Nat. Ges. Jena 8 (1900) 638.
Pachygrontha longicornis DISTANT, Fauna Brit. India: Rhynchota 2 (1904) 42.

Large, robust, yellow and brown and ochraceous; pronotum with a prominent median yellow vitta and lateral margins calloused with yellow, coarsely punctured, slightly more so on posterior lobe; scutellum with a prominent median yellow carina diverging into callosities near base; clavus with inner half brown outer half yellow; apical margin of corium calloused with yellow, interrupted about midway between apex and claval apex by a dark brown blotch that extends anteriorly upon corium to about one-third distance from base, below reddish brown, no prominent ventral abdominal vittæ; fore femora dark reddish below, yellow above with many brown spots; antennæ reddish brown becoming more so on apical expansion of first segment; apical one-fourth of third segment usually whitish-yellow.

Head broad, somewhat grooved near base, jugal carinæ prominently produced, less so in females, length head, males, 1.50 mm (1.42 to 1.56); females, 1.30 mm (1.24 to 1.36); interocular space, 0.84 mm (0.76 to 0.92), width across eyes, males, 1.41 mm (1.32 to 1.48); females, 1.35 mm (1.28 to 1.38); pronotum relatively elongate, lateral margins calloused, transverse constriction prominent, caudolateral angles somewhat tumid, length pronotum, males, 2.29 mm (2.00 to 2.48); females, 2.04 mm (1.84 to 2.16); width pronotum, males, 2.49 mm (2.24 to 2.64); females, 2.34 mm (2.12 to 2.44); scutellum with a prominent median carina diverging toward base to form two prominent raised yellow callosities and carina broadened into a raised callosity at apex, length scutellum, males, 1.55 mm (1.44 to 1.64); females, 1.37 mm (1.24 to 1.44); hemelytra with lateral corial margins slightly sinuate, narrowed near apex of scutellum, apical corial margin calloused along apical one-half, membrane

reaching or nearly reaching apex of abdomen, distance apex clavus-apex corium, males, 2.18 mm (1.96 to 2.32); females, 1.94 mm (1.76 to 2.00); distance apex corium-apex abdomen, males, 2.69 mm (2.24 to 3.20); females, 2.13 mm (2.00 to 2.28); labium reaching onto mesosternum, second labial segment reaching or very slightly exceeding anterior margin of prosternum; fore femora strongly incrassate armed below with four-five major black tipped spines (basal spines show a tendency to be "worn off" into stubs or for the proximal spine to be absent), length fore femora, males, 4.06 mm (3.72 to 4.40); females, 3.16 mm (2.76 to 3.50); basal tarsal segment of middle and hind legs much longer than segments two and three combined; antennæ long and filiform, apical segment strongly curved, clothed with rather long setæ, these becoming more dense on the two distal segments; length I, males, 6.50 mm (5.40 to 7.88); females, 3.12 mm (2.84 to 3.48); II, males, 4.61 mm (3.72 to 5.80): females, 2.02 mm (1.76 to 2.28); III, males, 3.50 mm (2.84 to 4.28); females, 1.98 mm (1.68 to 2.16; IV, males, 1.65 mm (1.44 to 1.80); females, 1.38 mm (1.28 to 1.44); total length, males, 10.93 mm (9.98 to 11.96); females, 9.42 mm (8.60 to 10.00).

Deposition of type.—Stockholm Museum.

Deposition of type.—P. brevicornis—Stockholm Museum.

Material examined.—Holotype male, *P. semperi,* holtoype female, *P. brevicornis* both from Philippines.

Paratypes.—30 males, 17 female. PHILIPPINES: Mindanao, Butuan, Davao, Surigao; Basilan Island. SIAM: Trong (Trang ?). FEDERATED MALAY STATES: Singapore, Kuala Lumpur, Gap (Frazer's Hill), Penang Island. BORNEO: Sarawak, R. Kapah Trib. of R. Tinjah, Mt. Kalulong; British North Borneo, Sandakan. JAVA: Western Java, Lebak Seve, Mt. Gede, alt. 4,500 feet (W. Java). Specimens in United States National Museum, British Museum, Vienna Museum, South Australian Museum, H. M. Harris, R. L. Usinger, Carnegie Museum, J. C. Lutz, and author's collections.

This species is one of the largest in the subfamily and its size and robust form will easily separate it from most of the other species of *Pachygrontha.* The species appears to range widely in the islands of the East Indies and at least into the southern portion of the Malay Peninsula. Despite considerable Philippine material of the genus, specimens of this species have been taken only from the Mindanao Region in the southern Philippines and

it appears doubtful whether *semperi* occurs in the central and northern islands of the archipelago. The Stål types from the Philippines do not bear locality information, but probably are from Mindanao or an adjacent island.

P. brevicornis Stål is undoubtedly based upon the female sex of *semperi* and as the latter name has page priority, *brevicornis* is here placed in synonymy. If the closely related *longicornis* Stål subsequently proves to be synonymous this name will of course have priority over either of the above, but for the reasons stated in the discussion of *longicornis* I prefer to consider it as a distinct species for the present.

There is considerable size variation in this species as may be noted in the description above and it may prove feasible in the future to recognize subspeciation in the various portions of the range. The sexual dimorphism is marked, females running smaller having much shorter antennæ and differing from the males in most body proportions.

The light apical portion of the third antennal segment, corial coloration and male gonostyli place this species in the *bakeri* group.

Zoogeographically the known distribution of this species follows very well the classic demarkation of Wallace's line separating the Oriental and Australian regions. The species having been taken in Java, Borneo, Sumatra (Lethierry, 1889), the southern Philippines and the Malay Peninsula, but no material is available from the New Guinea area although appreciable material from this area has been available for study. The status of *longicornis* described from the Island of Mysol, just south of Halmahera Island and considerably east of the Celebes is of considerable interest in considering the zoogeographical implications of this group.

PACHYGRONTHA LONGICORNIS (Stål), 1865.

Atractophora longicornis Stål, Soc. Ent. Fr. Ann. (1865) 188.
Pachygrontha longicornis Stål, Enum. Hemip. 4 (1874) 140.
Pachygrontha (sic) *longicornis* Lethierry, Mus. Civico di Storia Nat. Genova Ann. (2) 6 (1889) 462(?).
Pachygrontha longicornis Lethierry and Severin, Gen. Cat. Hemip. 2 (1894) 180.

General form, size and color as in *P. semperi*, clavus with tendency toward a yellow central stripe and dark margins; fore femora reddish-brown, darker below with the dark dorsal spotting only faintly indicated.

Pronotal punctures less dense than in type of *semperi,* but appearing to fall within the variation of the latter.

Head, length, 1.52 mm, width across eyes, 1.54 mm; interocular space, 0.96 mm; pronotum, length, 2.28 mm; width pronotum, 2.76 mm; scutellum, length, 1.80 mm; hemelytra with distance apex clavus-apex corium, 2.76 mm; distance apex corium-apex abdomen, 2.80 mm; fore femora, length, 4.52 mm; length fore femora possessing 5 major spines, right femora, 6; antennæ, length I, 9.20 mm; II, 6.68 mm; III, 4.28 mm; fourth segment missing. Total length, 12.08 mm.

This, the holotype specimen, closely resembles a large *semperi* in most respects, however the antennal length is considerably out of the range of variation of the series of *semperi* that I have studied, the head is broader and the corial apex-abdominal apex length is greater. Therefore, for the present it is considered advisable to retain *longicornis* as a distinct species.

Deposition of type.—Stockholm Museum.

Material examined.—Holotype male. Mysol Island (East Indies), Stevens.

Distribution.—Known only from the type locality. The record of Lethierry (1889) from Nias Island is a bare list reference and which species Lethierry had is uncertain. Distant's (1904) record from Burma is referred to *semperi* Stål.

PACHYGRONTHA NIGROVITTATA Stål.

Pachygrontha nigrovittata STÅL, Oefv. Vet. Ak. Forh. (1870) 662.
Pachygrontha nigrovittata STÅL, Enum. Hemip. 4 (1874) 140.
Pachygrontha nigrovittata LETHIERRY and SEVERIN, Gen. Cat. Hemip. 2 (1894) 181.
Pachygrontha nigrovittata DISTANT, Fauna Brit. India, Rhynchota 2 (1904) 41.
Pachygrontha nigrolineata DISTANT, Philip. Jour. Sci. 5 (1910) 59. (New synonymy.)
Pachygrontha obluctans BERGROTH, Zeit. Wissenschaft. Insekten Biol. 3 (1924) 37. (New synonymy.)

General coloration testaceous; marked with brown to castaneous as follows: close set punctures along lateral margins of pronotum, a median and apical spot along each apical margin of coria, a pair of broad longitudinal stripes on abdominal tergum terminating near penultimate abdominal segment, narrow central stripe on apical tergite and markings at lateral angles of apical and preapical tergites, broad longitudinal vitta on abdominal venter midway between meson and margin, mesosternum

mesad, coxæ profuse spotting on femora and tibiæ, mesal stripe on female ovipositor and punctures over entire surface.

Head broad, slightly tapered anteriorly, jugal carinæ moderately elevated, length head, 1.23 mm (1.20 to 1.44) ; width across eyes, 1.27 mm (1.18 to 1.36) ; interocular space, 0.77 mm (0.72 to 0.85) ; pronotum with lateral margins nearly straight, sometimes appearing slightly sinuate, calloused, a mesal calloused carina becoming obsolete posteriorly, area of calli well defined, transverse depression absent or very obsoletely indicated, mesal area posteriorly somewhat flattened, punctures along lateral margin much more closely placed than on remainder of surface, length pronotum, 1.95 mm (1.72 to 2.20) ; width pronotum, 2.03 mm (1.84 to 2.20) ; scutellum with a prominent calloused median carina and very weak basal depression, length, 1.35 mm (1.20 to 1.60) ; hemelytra with lateral corial margins straight, apical corial margin uncalloused, membrane reaching to last abdominal segment in males, to apex of abdomen in females, distance apex clavus-apex corium, 2.09 mm (2.00 to 2.28) ; distance apex corium-apex abdomen, 2.41 mm (2.24 to 2.68) ; fore femora only moderately incrassate, armed below with 4 to 5 black tipped spines, mid and hind tarsi with basal segment much longer than segments two and three combined, length fore femora, 2.93 mm (2.44 to 3.56) ; labium reaching nearly midway onto mesosternum, second segment reaching or slightly exceeding anterior margin of prosternum; antennæ elongately filiform, clothed with rather long hairs, length I, males, 5.61 mm (4.60 to 6.52) ; females, 2.71 mm (2.56 to 3.48) ; II, males, 4.09 mm (3.20 to 5.00) ; females, 1.83 mm (1.78 to 2.32) ; III, males, 3.07 mm (2.48 to 3.64) ; females, 1.83 mm (1.64 to 2.00) ; IV, males, 1.28 mm (1.16 to 1.40) ; females, 1.17 mm (1.08 to 1.24). Total length, 9.90 mm (8.90 to 11.48).

Deposition of type.—Stockholm Museum.

Deposition of type of *P. nigrolineata* Dist.: British Museum.

Deposition of type of *P. obluctans* Bergr.: Presumably University of Helsinki.

Material examined.—Holotype female, Philippines. 8 males, 17 females. PHILIPPINES: Luzon, Alabang (Rizal Province), Mt. Maquiling (Laguna Province), alt. 50 meters, Bacoor. RYUKYUS: Okinawa, Iwa, Kanna, Chizuka. FORMOSA: Kuraru. INDIA: Assam, Doom Dooma. CEYLON: Kandy. HAINAN ISLAND: Wong Lung, Chuen N. E. of Nodoa. HONG KONG; MALAY STATES: Singapore.

Specimens in United States National Museum, Chicago Natural History Museum, British Museum, University of the Philippines, South Australian Museum, Vienna Museum, Indian Museum, Matsuyama Agricultural College, and author's collections.

This large slender species appears to range widely over much of the Oriental region. It is closely related to *P. lurida* differing by its larger size and several structural and color differences as noted in the key.

Variation within this species is considerable and varies somewhat geographically, but intermediate specimens are present to make even subspecific separation impossible in the relatively small amount of material available. Comparison of a series from Okinawa and one from Alabang, Rizal Province, Luzon, indicates the variation, in that Okinawan material is consistently larger. The following measurements are of 5 Philippine and 4 Okinawan females.

	OKINAWA		PHILIPPINES	
	Mean	Extremes	Mean	Extremes
1st ant. segment	3.23	3.04 to 3.48	2.74	2.56 to 3.00
2nd ant. segment	2.17	2.00 to 2.32	1.90	1.78 to 2.04
3rd ant. segment	1.90	1.80 to 2.00	1.76	1.64 to 1.88
4th ant. segment	1.19	1.16 to 1.24	1.16	1.08 to 1.20
Interocular space	0.79	0.76 to 0.80	0.74	0.72 to 0.76
Width across eyes	1.32	1.28 to 1.36	1.22	1.18 to 1.24
Length pronotum	2.03	1.84 to 2.20	1.82	1.72 to 1.92
Width pronotum	2.16	2.00 to 2.28	1.93	1.84 to 2.02
Length head	1.34	1.28 to 1.36	1.26	1.20 to 1.30
Length fore femora	2.96	2.76 to 3.16	2.69	2.44 to 2.80
Total length	10.29	9.46 to 10.64	9.26	8.84 to 9.52

Pachygrontha nigrolineata Distant, 1910 described from Manila and excellently figured by Distant's illustrator H. Knight appears to me to be unquestionably synonymous with *nigrovittata* Stål.

I also consider Bergroth's *obluctans* described from Sumatra as synonymous. The description of *obluctans* fits *nigrovittata* in all particulars. Bergroth was perhaps misled by Stål's statement that *nigrovittata* has the anterior pronotal margin broader than the head. This is not true of the type nor of any specimen of *Pachygrontha* known to me. The differences in the coloration appear to be unquestionably sexual. Stål's species was described from a female while Bergroth specifically mentions only the male sex.

This species has been taken at light both on Okinawa and in the Philippines.

PACHYGRONTHA LESTONI sp. nov.

General coloration light testaceous; marked with black as follows: series of closely set punctures near lateral margins of pronotum, caudolateral pronotal angles, apex of clavus, spot on apex of corium and second spot along apical margin of corium midway between apex and mesal angle, a pair of mesolateral longitudinal stripes on abdominal tergites, becoming obsolete posteriorly, an indistinct longitudinal stripe midway on thoracic pleurites, meson of thoracic sternum; antennæ and legs bearing numerous conspicuous dark brown spots; all dorsal punctures dark brown to black; membrane dusky between the veins.

Head tapering anteriorly, only moderately declivent, length head, 1.14 mm; width across eyes, 1.18 mm; interocular space, 0.78 mm; pronotum elongate, tapering anteriorly, lateral margins scarcely calloused, strongly sinuate, transverse impression absent, length pronotum, 1.85 mm, width pronotum, 1.88 mm; scutellum with a smooth scarcely calloused median stripe, basal ridge and resultant depression obsolete, length, 1.35 mm; hemelytra with lateral corial margin nearly straight, apical corial margin non-calloused, membrane reaching apex of abdomen (wings raised so as to make measurements of this area impossible); labium apparently barely reaching mesosternum, second segment attaining anterior margin of prosternum; fore femora rather strongly incrassate, armed below with 4 major black-tipped spines, length, 2.84 mm, basal tarsal segment as long as segments two and three combined; antennæ slenderly filiform, terminal swelling of basal segment relatively elongate, comprising one-seventh of entire length of segment, terminal segment nearly straight, length antennal segments I, 3.55 mm; II, 2.51 mm; III, 1.92 mm; IV, 1.08 mm. Total length, 9.51 mm.

Holotype.—Male, Kaniania, Kasai: Tshikopa. BELGIAN CONGO. (C.2) 1930 (Dr. Fourche). In Musée du Congo.

P. lestoni is quite distinct from any species known to me from the Ethiopian Region. It is rather closely related however, to *P. nigrovittata* Stål, to which it bears a marked resemblance. From *nigrovittata, lestoni* may be distinguished by the much shorter, spotted antennæ and the large blackish spot at each caudo-lateral angle of the pronotum. Here again the close relationship between the Ethiopian and Oriental species is well exemplified. I take pleasure in dedicating this new

species to Mr. Dennis Leston our leading student of the Ethiopian Pentatomoidea.

PACHYGRONTHA LURIDA LURIDA sp. nov.

General coloration pale testaceous, marked with brown as follows: a small spot midway along apical margin of corium, apex of corium lacking a dark spot, pronotal punctures near lateral margin on anterior portion and laterally on head, small spots on antennæ and larger ones on femora and tibiæ, apices of major fore-femoral spines; castaneous mesally on mesosternum and sometimes on the predominately testaceous fore coxæ, venter of female with a pair of very prominent longitudinal brown vittæ midway between meson and margin and along the edges of the valvifers of the ovipositor, male with only a very faint indication of a longitudinal vitta on venter, last abdominal tergite of female with an inconspicuous median stripe.

Head nearly straight, not at all declivent, tapering anteriorly, jugal carinæ low and straight, length head, 1.18 mm (1.14 to 1.22); width across eyes, 1.07 mm (1.04 to 1.12); interocular space, 0.70 mm (0.68 to 0.72); pronotum relatively flattened, lateral margins nearly straight, sometimes somewhat sinuate and strongly calloused, transverse constriction absent or obsoletely indicated, median carina present on anterior three-fourths, area of calli relatively well-defined caudo-lateral angles somewhat tumidly rounded, length pronotum, 1.50 mm (1.40 to 1.56); width pronotum males, 1.44 mm; females, 1.63 mm (1.60 to 1.64); scutellum with faint, low median calloused carina, basal depression and resultant caudal elevation obsolete, length scutellum, 1.11 mm (1.04 to 1.20); hemelytra with lateral corial margin nearly straight, apical margin of corium non-calloused, membrane reaching at least onto apical abdominal tergite, distance apex clavus-apex corium, 1.80 mm; distance apex corium-apex abdomen, male, 1.92 mm; females, 2.32 mm; fore femora relatively slender, armed below with 4 to 5 major spines, length fore femora, 2.48 mm (2.24 to 2.68), basal tarsal segment longer than segments two and three combined; labium reaching just onto mesosternum, second segment reaching or somewhat exceeding base of head; antennæ very slenderly filiform, terminal segment slightly curved, length I, male, 4.00 mm; females, 2.93 mm (2.60 to 3.12); II, male, 2.84 mm; females, 1.90 mm (1.70 to 2.00); III, male, 1.88 mm; females, 1.52 mm (1.30 to 1.64); IV, 0.96 mm (0.84 to 1.04). Total length, 8.36 mm (8.00 to 8.72).

Holotype.—Male, Alabang, Rizal Province, Luzon, Philippines. In *United States National Museum 61932* (*B. Malkin*). December, 1945.

Paratypes.—3 females, same data as type and Victorias, Negros, Philippines. October 9, 1927. In United States National Museum and author's collections.

Three of the above four specimens were taken at light.

This small light colored species is related to *nigrovittata,* but may readily be distinguished by its smaller size, shorter pronotum, light colored fore coxæ, lack of a dark spot on the apex of the corium and other characters as noted in the key. *Lurida* is extremely closely related to *angusta* Stål, the type of which I have examined. The antennæ and femora of *angusta* are relatively much longer. I have considered the above specimens as constituting a distinct species with some hesitation. It is conceivable that the Stål type and the male specimen of *lurida* represent extremes and that a representative series might show intermediate conditions. Males of the two species are rather distinctive in having the length of the pronotum greater than the posterior width. The two species may be distinguished from the allied *austrina* by the less sharply angled and more attenuated apex of the head and by the shape of the gonostyli.

PACHYGRONTHA LURIDA YAKUENSIS subsp. nov.

General coloration and markings very much as in typical *lurida,* tending toward a darker, more brownish ground color.

Very similar to *lurida lurida* in shape and habitus, differing primarily in the larger size, greatly elongated antennæ of the male, and the longer pronotum relative to the head. Head length, 1.20 to 1.28 mm; width across eyes, 1.14 mm; interocular space, 0.71 to 0.74 mm; length pronotum, 1.70 to 1.78 mm; width pronotum, male, 1.70 mm; female, 1.82 mm; length scutellum, 1.20 mm; hemelytra with distance apex clavus-apex corium, 1.99 mm; distance apex corium-apex abdomen, 1.99 to 2.13 mm; length fore femora, male, 3.34 mm, female, 2.98 mm; antennæ length I, male, 7.75 mm; female, 3.44 mm; II, male, 4.05 mm; female, 2.20 mm; III, male, 2.77 mm; female, 1.70 mm; IV, male, 1.14 mm; female, 1.07 mm. Total length, 9.02 to 9.09 mm.

Holotype.—Male. Onoaida, Yakushima Island, Japan. August 27, 1952. (C. Takeya). In Kyushu University collections.

Paratypes.—2 females. Same data as holotype. In author's collection.

PACHYGRONTHA ANGUSTA Stål, 1870.

Pachygrontha angusta STÅL, Ofv. Kongl. Vet.-Ak. Forh. 7 (1870) 662.

Pachygrontha angusta STÅL, Enum. Hemip. 4 (1874) 140.

Pachygrontha angusta LETHIERRY and SEVERIN, Gen. Cat. Hemip. 2 (1894) 180.

General coloration testaceous to dull cinereous; fore coxæ castaneous, otherwise marked as in *lurida*.

Head as in *lurida*, not declivent, considerably produced and tapering anteriorly, length head, 1.28 mm; width across eyes, 1.08 mm; interocular space, 0.70 mm; pronotum with lateral margins somewhat sinuate, transverse impression absent or extremely obsoletely indicated, median stripe faint, disappearing posteriorly, length pronotum, 1.64 mm; width pronotum, 1.48 mm; scutellum with basal ridge and resultant depression obsolete; hemelytra with lateral corial margin non-calloused, membrane reaching onto terminal abdominal tergite, but not attaining apex of abdomen, distance apex clavus-apex corium, 1.88 mm; distance apex corium-apex abdomen, 2.12 mm; labium extending onto mesosternum, second segment reaching or nearly reaching base of head; fore femora elongate, slenderly incrassate, armed below with four major spines, length, 3.27 mm; antennæ very slenderly filiform, length I, 5.68 mm; II, 4.68 mm (three and four missing). Total length, 9.28 mm.

Deposition of type.—Stolkholm Museum.

Material examined.—Holotype male. "Ins. Philipp." (Semper).

As noted under the discussion of *lurida* this species and the latter are very closely related. The elongate antennæ, and fore femora and the darker color being the principal distinguishing characters. It is possible subsequent collecting may show these two forms to be conspecific, but I feel the differences are too great at present to retain the specimens under a single specific entity.

Angusta agrees with *lurida* and its Yakushima subspecies in the long attenuated non-declivent clypeal region. The probable presence of a "rassenkreis" in this group has been another factor in my hesitation to consider *angusta* and *lurida* as conspecific.

There are two specimens in the United States National Museum from Bacoor, Cavite Province, Philippines, that may belong here, but lack fore femora and antennæ thus making specific determination tentative.

PACHYGRONTHA AUSTRINA Kirkaldy, 1908.

Pachygrontha austrina KIRKALDY, Linn. Soc. New South Wales Proc. 32 (1908) 771.

General coloration testaceous, often becoming darker near base of scutellum and on head; femora and antennæ, especially basal segment, profusely spotted with brown, a brown spot present on apical corial margin midway between apex and claval angle, apex lacking a brown spot; female venter with a pair of broad brown longitudinal stripes midway between meson and margin; punctures relatively small, shallow and widely spaced.

Head moderately declivent, clypeus much less strongly produced than in *luridus*, jugal carinæ low and evenly divergent to base, length head, 1.07 mm (0.92 to 1.16); width across eyes, 1.07 mm (0.99 to 1.21); interocular space, 0.68 mm (0.64 to 0.75); pronotum with lateral margins somewhat calloused, transverse impression obsolete or absent, meson usually with a lævigate stripe, length pronotum, 1.51 mm (1.28 to 1.70); width pronotum, 1.62 mm (1.35 to 1.92); scutellum with a weak median carina on apical one-third, basal depression obsolete, length scutellum, 1.12 mm (0.88 to 1.28); hemelytra with lateral corial margin nearly straight, very slightly expanded caudad of apex of scutellum, apical corial margin noncalloused, membrane attaining or nearly attaining apex of abdomen, distance apex clavus-apex corium, 1.77 mm (1.49 to 1.99); distance apex corium-apex abdomen, 2.24 mm (1.72 to 2.84); labium short, barely attaining anterior portion of mesosternum, second segment not exceeding base of head; fore femora slenderly incrassated, armed below with 5 major spines (occasionally 4), length fore femora, 2.45 mm (2.16 to 2.91); antennæ slenderly filiform, terminal swelling of first segment relatively elongate, but slender, length I, male, 4.24 mm (3.48 to 5.32); female, 2.82 mm (2.48 to 3.20); II, male, 3.18 mm (2.44 to 4.19); female, 1.79 mm (1.56 to 2.08); III, male, 2.11 mm (1.72 to 2.63); female, 1.42 mm (1.24 to 1.63); IV, 0.90 mm (0.82 to 0.94). Total length, 8.40 mm (7.16 to 9.37).

Deposition of type.—Unknown.

Material examined.—26 males, 23 females. AUSTRALIA: Queensland, Torres Straits, Cairns, Townsville, Lankelly Creek, McIlwraith Range (Cape York), Rockhampton, Kuranda, Bathhurst Head, Magnetic Island, Cape York, (Hamlyn-Harris)? Northern Territory, Darwin, Roper River. DUTCH NEW GUI-

NEA: Fak Fak, Key Island. PHILIPPINES: Mindanao, Tangcolan, Bukidnon. FORMOSA: Kuraru, Tiahanroku, Takao. Specimens in South Australian Museum, United States National Museum, Museum of Comparative Zoology (Harvard), Sidney Museum, H. M. Harris, Stockholm Museum, Hungarian National Museum, British Museum, Kyushu University, Vienna Museum, Carnegie Museum, J. C. Lutz, and author's collections.

This is apparently a widely ranging species in the Western Pacific. A considerable amount of variability exists in the series studied. Specimens from Mindanao run smaller and are more ochraceous in coloration. It seems probable that eventually *austrina* will be shown to segregate into several subspecific populations in the Western Pacific. In Australia where forty-five specimens of the above series were taken, *austrina* appears to be limited to the north-eastern part of the continent.

In general habitus this species is very similar to *lurida* from which it may be distinguished by its less anteriorly extended head and clypeus. However, the resemblance may be of a somewhat superficial nature as the male gonostyli are quite distinct between the two species.

The species has been taken at light in Australia.

Kirkaldy described his species from Kuranda, Queensland. I have not seen the type, but do have a mutilated specimen from the type locality that is representative of the series described above. The original description although very general fits the species very well, except for the indication of a slightly larger size (10 mm). I believe that I have successfully placed this form as Kirkaldy's species.

PACHYGRONTHA QUADRIPUNCTATA (Signoret), 1860.

Atractophora quadripunctata SIGNORET, Soc. Ent. Fr. Ann. (1860) 948. (*Fig.*)
Pachygrontha quadripunctata STÅL, Hemip. Afr. 2 (1865) 148.
Pachygrontha quadripunctata STÅL, Enum. Hemip. 4 (1874) 140.
Pachygrontha quadripunctata LETHIERRY and SEVERIN, Gen. Cat. Hemip. 2 (1894) 181.

General coloration light brown; median and two lateral spots at base of scutellum, pair of spots on apical margin of corium, one at apex other midway between apex of clavus and apex of corium, black; brown ground color becoming castaneous on antennal segments, venter, fore femora, coxæ and trochanters; third antennal segment white on apical third.

Body deeply and coarsely punctured, nearly glabrous above, sparsely clothed below with short sericeous pile.

Large robust species; head broad and little tapered to apex, jugal carinæ moderately produced, length head, 1.48 mm; width across eyes, 1.48 mm; interocular space, 0.92 mm; pronotum with margins strongly calloused, a prominent median carina, transverse impression moderately well developed, strongly narrowed from posterior to anterior margins, length pronotum, 2.24 mm; width pronotum, 2.36 mm; scutellum, with a prominent median carina, swollen at base with a deep basal depression, length scutellum, 1.56 mm; hemelytra with membrane reaching to near apex of abdomen; labium reaching anterior portion of mesosterum, second segment considerably exceeding anterior margin of prosternum; fore femora armed below, with four major spines present between all but basal and second from basal major spines, length fore femora, 3.72 mm; antennæ very elongate and slender, basal segment prominently capitate at apex, terminal segment strongly curved, length I, 6.64 mm; II, 4.76 mm; III, 3.52 mm; IV, 1.68 mm. Total length, 11.72 mm.

Deposition of type.—Vienna Museum.

Material examined.—2 males, 1 female all from Madagascar. Specimens in Vienna Museum, Hungarian National Museum.

Distribution.—Confined to Madagascar.

This large species appears externally to be most closely related to *semperi* and *longicornis* from the western Pacific Region. I here designate as lectotype a male (described above) from the Signoret collection in the Vienna Museum. This specimen bears the labels "Madagasc. Coll. Signoret," "4–punctata Det. Signoret," "Mus. Caes. Vindsbon." The male in the Hungarian National Museum differs in being proportionately smaller (length, 11.20 mm), possessing a relatively broader pronotum (length, 2.12 mm; width, 2.40 mm)), in the possession of black spots on the humeral areas of the pronotum, having larger black spots on the apical margin of the corium and a darker enlargement on the apex of the first antennal segment.

Considerable sexual dimorphism exists. The female before me has antennal lengths of I, 3.68 mm; II, 2.28 mm; III, 2.20 mm; IV, 1.40 mm; has a slightly wider pronotum than the males (2.24 mm width, 2.52 mm) and is shorter (10.36 mm). The venter bears a black longitudinal vitta midway between meson and margin that fuses near base of ovipositor. In this

female distance base venter to base ovipositor is 2.00 mm, distance base ovipositor to apex abdomen 3.40 mm. The male gonostyli are of the *bipunctata* type (Plate 2, fig. 7).

PACHYGRONTHA BIPUNCTATA Stål, 1865. **Plate 1, fig. 5.**

Pachygrontha bipunctata STÅL, Hemip. Afr. 2 (1865) 149.
Pachygrontha tabida STÅL, Ofv.-Ak. Kongl. Forh. 27 (1870) 662. New synonymy.
Pachygrontha bipunctata STÅL, Enum. Hemip. 4 (1874) 140.
Pachygrontha tabida STÅL, Enum. Hemip. 4 (1874) 140.
Pachygrontha bipunctata BERGROTH, Rev. d'Ent. (1893) 198.
Pachygrontha bipunctata LETHIERRY and SEVERIN, Gen. Cat. Hemip. 2 (1894) 180.
Pachygrontha tabida LETHIERRY and SEVERIN. Gen. Cat. Hemip. 2 (1894) 181.
Pachygrontha tabida DISTANT, Faun. Brit. India. Rhynch. 2 (1904) 42.
Pachygrontha dixoni DISTANT, Faun. Brit. India. Rhynch. 2 (1904) 42. New synonymy.
Pachygrontha dixoni BREDDIN, Deutsch. Ent. Zeit. (1907) 220.
Pachygrontha bipunctata DISTANT, Linn. Soc. Lond. Trans. ser. 2 13 (1909) Zool. 39.
Pachygrontha bipunctata DISTANT, Linn. Soc. Lond. Trans. ser. 2 16 (1913) Zool. 150.
Pachygrontha confusa DISTANT, Linn. Soc. Lond. Trans. ser. 2 16 (1913) Zool. 151. New synonymy.
Pachygrontha cruenta BERGROTH, Philip. Jour. Sci. 13 (1918) 71–72. New synonymy.

General coloration testaceous to light ochraceous, apical corial margin with a median dark brown spot, sometimes tinged with reddish or fuscous along margin; profuse spotting on femora, particularly the anterior femora, terminal tarsal segment, sometimes gular region and apex of labium and tip of clavus brown; punctures near antero-lateral edge of pronotum sometimes conspicuously darker and more closely set than on remainder of pronotal disc; clothed below and on head with decumbent sericeous pile.

Head only slightly narrowed anteriorly, rather strongly declivent, jugal carinæ low and nearly straight, length head, 0.91 mm (0.78 to 1.12); width across eyes, 1.02 mm (0.96 to 1.08); interocular space, 0.63 mm (0.58 to 0.66); pronotum with lateral margins straight or slightly sinuate, evenly but slightly narrowing anteriorly, surface rather flat and smooth, transverse impression usually evident, but very broad and shallow, sometimes nearly indistinguishable, area of calli somewhat prominent, length pronotum, 1.26 mm (1.12 to 1.42); width

pronotum, 1.50 mm (1.36 to 1.64); scutellum with a low basal swelling, not ridged or subcarinate and usually with a low but well defined median carina or elevation on apical half, length scutellum, 0.94 mm (0.84 to 1.04); hemelytra with lateral margins straight or slightly expanded beyond apex of scutellum, apical corial margin non-calloused, membrane reaching to or slightly beyond apex of abdomen, distance apex clavus-apex corium, 1.35 mm (1.16 to 1.68); distance apex corium-apex membrane, 1.43 mm (1.28 to 1.80); labium barely attaining mesosternum, second segment not or barely reaching anterior margin of prosternum; fore femora armed below with four short major spines, length males, 2.10 mm (1.68 to 2.41); females, 1.94 mm (1.78 to 2.16); basal tarsal segment equal to or longer than combined length of segments two and three; antennæ slenderly filiform, apical swelling of basal segment small and inconspicuous, terminal segment slightly curved, length antennal segments I, males, 3.49 mm (2.12 to 4.12); females, 2.28 mm (1.49 to 3.20); II, males, 2.56 mm (1.49 to 3.20); females, 1.45 mm (1.20 to 1.72); III, males, 1.98 mm (1.32 to 2.32); females, 1.34 mm. (1.16 to 1.56); IV, males, 0.94 mm (0.80 to 1.08); females, 0.89 mm (0.72 to 1.04). Total length, males, 6.33 mm (5.68 to 7.56); females, 6.70 mm (5.89 to 7.67).

Deposition of Types—

Pachygrontha bipunctata Stål. Stockholm Museum.
Pachygrontha tabida Stål. Stockholm Museum.
Pachygrontha dixoni Distant. British Museum.
Pachygrontha confusa Distant. British Museum.
Pachygrontha cruenta Bergroth. Presumably in University of Helsinki collections.

Material examined.—Holotypes of *P. bipunctata* and *P. tabida.* 163 males, 144 females. BELGIAN CONGO: Zambi; Eala; Ubangi: Gemena; Lokandu; Congo de Lemba; Nyangwe; Wombali; Bomba; Libenge; Elisabethville; Kunzulu; Stanleyville Equateur; Bokuma; Moyen Kwilu; Leverville; Kisantu; Rutshuru; Haut-Uele; Yebo; Kasongo Lunda; Bumba; Lemfu; Haut Uele: Paulis; Equateur: Bokote; Mayidl; Kitwit. E. TANGANYIKA: Kigoma. MOZAMBIQUE. NIGERIA: Olokemeji. DAHOMEY: Zagnanado, Ifan; Yapo C.I.; Mt. Nimba N.E. 500 to 700 m. MAURITIUS; SEYCHELLES: Mahe. INDIA: Calcutta; Majra Dehra Dun 2,200 ft., U.P. India. Bombay; Chabua (Assam).

NEPAL. Jahada. CEYLON: Colombo. PHILIPPINES: LUZON; Rizal, Alabang; Leyte, Tacloban; Mindanao, Dapitan, Zamboanga; Negros, Guintaboan; Cavite, Bacoor. MALACCA; BORNEO: Sandakan, Sarawak; PENANG; RYUKYUS: Okinawa, Chizuka; Kuba Saki; Naha. JAPAN: Yakushima, Onoaida; Shikoku; Muroto Cape (Tosa). NEW GUINEA: Hollandia. AUSTRALIA: Darwin. Specimens in United States National Museum, Institut Francais d' Afrique Noire, British Museum, South Australian Museum, Iowa State College, Carnegie Museum, Deutsches Entomologisches Institut, Vienna Museum, Musée du Congo, Kyushu University, Indian Museum, Stockholm Museum, J. C. Lutz, and author's collections.

This species presents the most interesting and difficult problem in the entire genus. Despite considerable effort I have been unable to separate satisfactorily the material of this group into even subspecific populations. Certain tendencies do appear but these do not illustrate even a cline in the available material. The Indian series averages somewhat smaller with a reduced total length/width pronotum ration, but these differences do not appear to be statistically significant to the degrees desirable for subspecific recognition. The male gonostyli offer no characters for separation although with *congœnsis* and *quadripunctata* they are quite unique within the genus. One of the difficulties has been that while considerable numbers of specimens are available they are often representative of one or only a very few localities and in many cases the series from an important locality is very inadequate with many very important areas completely lacking in material. I have thus felt it necessary to synonymize several names under a single species with the realization that subsequent detailed studies may indicate subspecific populations to be present within the species.

P. bipunctata in the sense considered here is very closely allied to *congœnsis*. I consider the latter to have almost the status of a sibling species and it is certainly derived from the *bipunctata* stock. *P. bipunctata incipiens* from Southeastern Africa is readily separable as a distinct subspecies by its larger size that can best be expressed as a ratio of the pronotal width to the total length as noted under the discussion of *incipiens* and in the key.

Pachygrontha confusa Distant appears to be based upon males of *P. bipunctata* Stål. Failure to recognize the marked sexual dimorphism of the antennal length apparently led Distant to

fell that two species were involved. In the Seychelles Distant notes the species was taken from grasses only in the lowlands.

PACHYGRONTHA BIPUNCTATA INCIPIENS subsp. nov.

General form and color as in typical *bipunctata,* apical corial margin often suffused with pinkish in addition to the median brown spot and sometimes with reddish coloration along lateral pronotal margins.

Head, length, 1.06 mm (0.92 to 1.14) ; width across eyes, 1.04 mm (1.00 to 1.12) ; interocular space, 0.68 mm (0.64 to 0.68) ; pronotum, length, 1.44 mm (1.32 to 1.56) ; width pronotum, 1.68 mm (1.60 to 1.80) ; scutellum, length, 1.14 mm (0.99 to 1.21) ; hemelytra with distance apex clavus-apex corium 1.64 mm (1.60 to 1.72) ; distance apex corium-apex abdomen, 1.68 mm (1.64 to 1.80) ; fore femora, length males, 2.63 mm (2.48 to 2.91) ; females, 2.34 mm (2.20 to 2.48) ; antennæ, length I, males, 4.04 mm (3.64 to 4.92) ; females 2.60 mm (2.36 to 2.84) ; II, males, 3,12 mm (2.64 to 3.92) ; females, 1.56 mm (1.40 to 1.72) ; III, males, 1.92 mm (1.56 to 2.04) ; females, 1.40 mm (1.28 to 1.52) ; IV, 1.08 mm (0.96 to 1.20). Total length, 7.66 mm (7.40 to 8.02).

Holotype.—Male. Eshowe, Zululand. March 15 to 18, 1951 (A. L. Capener). In Transvaal Museum, Pretoria.

Paratypes.—6 males, 9 females: UNION OF SOUTH AFRICA: Zululand; Eshowe, Mtunzini. Natal: Escombe, Umtentweni, Umkomaas. Specimens in United States National Museum, British Museum, Hungarian National Museum, Musée du Congo, Stockholm Museum, J. C. Lutz, and author's collections.

This South African race shows all the characteristics of the widely ranging *bipunctata* but is of a considerably larger size. The total length averages over seven and one half mm and the ratio of the pronotal width to the total length exceeds 4.6. Occasional specimens from the Congo Region and Dahomey approach *incipiens* in size and ratio proportions, but percentagewise the two populations exceed the generally accepted 70 per cent rule for the characteristics noted above. The gonostyli (Plate 2, fig. 7) are of the *bipunctata* type.

PACHYGRONTHA CONGŒNSIS sp. nov.

General coloration testaceous becoming reddish-cinereous on head, pronotum and scutellum; pronotum with a median light lævigate stripe, lateral margins narrowly calloused with whitish-yellow; scutellum with a median pale stripe on posterior half

and obscure light lateral callosities near base; apical corial margin with a median dark brown spot, entire margin frequently suffused with bright reddish coloration, extreme apex of clavus marked with brownish; femore with numerous brown spots and membrane frequently with obscure brown striping; clothed below and on head and scutellum with decumbent, sericeous pile; punctures relatively small and shallow, becoming more closely set along antero-lateral pronotal margins.

Head elongate, tapering anteriorly, only moderately declivent, narrowing anteriorly to give an elongate appearance to head, jugal carinæ low and straight, length head, 0.88 mm (0.78 to 0.99), width across eyes, 0.92 mm (0.85 to 0.99); interocular space, 0.57 mm (0.50 to 0.57); pronotum with lateral margins calloused and rather strongly sinuate, transverse impression shallowly but definitely indicated, dorsal surface rather noticeably convex, posterior lobe irregularly so, length pronotum, 1.28 mm (1.06 to 1.35); width pronotum, 1.49 mm (1.35 to 1.63); scutellum with a shallow basal depression and low calloused median stripe on posterior half, length scutellum, 0.99 mm (0.85 to 1.06); hemelytra with lateral margins somewhat expanded midway of claval commissure, apical corial margin non-calloused, membrane exceeding apex of abdomen in both sexes, distance apex clavus-apex corium 1.28 mm (1.06 to 1.42); distance apex corium-apex membrane, 1.42 mm (1.42 to 1.49); labium reaching nearly midway onto mesosternum, second segment attaining or somewhat exceeding base of head; fore femora slenderly incrassate, armed below with four major spines, length, 1.99 mm (1.85 to 2.27); antennæ very slenderly filiform, apical club of first segment small and inconspicuous, terminal segment relatively elongate and straight, or nearly so, length I, males, 2.41 mm (1.99 to 3.20); females, 1.92 mm (1.85 to 2.13); II, males, 1.70 mm (1.21 to 2.41); females, 1.28 mm (1.14 to 1.42); III, males, 1.42 mm (1.14 to 1.85); females, 1.21 mm (1.06 to 1.35); IV, 0.85 mm (0.78 to 0.92). Total length, 6.32 mm (5.68 to 6.60).

Holotype.—Male, Kwango-Kimbou, Belgian Congo. 1925 (P. Vanderijst), in Musée du Congo.

Paratypes.—19 males, 22 females. BELGIAN CONGO: Sankuru, Kisantu, Haut-Uele Paulls, Boma, Leverville, Bolobo, Kwango-Kimbou, Eala, Wombali, Bambesa, Bumba, Nyangwe, Kikwit, Mahagi-Niarembe, Terr. Rutshuru, Ituri Blukwa, Tshikay (Banane), Bokoro, Zambi, Congo da Lemba, Lac Kivu Cheff.

N'Gwese, Ubangi, Gemena, Haut-Uele Mauda, Bumbuli, Lemfu à Kimpese. E. TANGANYIKA: Kigoma. ABYSSINIA. Specimens in Musée du Congo, Stockholm Museum, British Museum, United States National Museum, J. C. Lutz, and author's collections.

Congœnsis is a very close relative of *bipunctata* which it resembles in size and most structural characteristics. It is sympatric with *bipunctata* in Central Africa and only the presence of a rather extensive series of both species in the Museé du Congo collections has enabled the separation of these almost sibling species from one another. The male gonostyli are of the *bipunctata* type and aside from certain color trends the shape of the head is the only reliable criterion for specific separation of the two species. In *congœnsis* the anterior portion of the head is more attenuated and can perhaps best be expressed as having the distance from the posterior edge of the jugal carinæ to the most anterior extension of the clypeus subequal to or greater than the width across the base of the carinæ. In *bipunctata* the width across the base of the carinæ is always greater than the distance from the base of the carinæ to the most anterior extension of the clypeus.

PACHYGRONTHA LINEATA Germar, 1837.

Pachygrontha lineata GERMAR, Silberman Rev. 5 (1837) 153.
Pachygrontha lineola SPINOLA, Gen. Ins. Artr. (1852) 141.
Atractophora fusifemur STÅL, Oefv. Vet. Ak. Forh. (1855) 34.
Pachygrontha lineata STÅL, Hemip. Afr. 2 (1865) 148–149.
Pachygrontha lineata STÅL, Enum. Hemip. 4 (1874) 140.
Pachygrontha lineata LETHIERRY and SEVERIN, Gen. Cat. Hemip. 2 (1894) 180.

General coloration testaceous, becoming somewhat ferrugineous on head, pronotum and fore femora; head, thorax and scutellum with a continuous yellow lævigate calloused median stripe; lateral margins of pronotum and three basal scutellar spots calloused yellow; basal area of scutellum and a group of closely set punctures near lateral margin of anterior lobe of pronotum, black; apical margin of corium with two very small inconspicuous brown spots, one located midway along margin, the other at apex.

Clothed below and on lateral region of head with decumbent sericeous pile, above with a very few sparse hairs; punctures small, shallow and with exception of those noted above light brown and inconspicuous.

Head small, prominently convex, very slightly tapering cephalad, jugal carinæ slow and gently curving, not abruptly bent, length head, female, 1.04 mm width across eyes, 1.04 mm (1.00 to 1.08); interocular space, 0.67 mm (0.64 to 0.68). Pronotum strongly convex, lateral margins deeply sinuate, transverse impression prominent, but shallow, length pronotum, male, 1.60 mm; females, 1.72 mm, width pronotum, male, 1.68 mm; females, 1.84 to 1.88 mm; scutellum with a deep basal depression and strong ridge caudad of this, lævigate median line carinate, length scutellum, 1.04 mm; hemelytra with lateral margins of corium expanded at about caudal one-third of scutellum, apical corial margin non-calloused, membrane not quite attaining apex of abdomen, distance apex clavus-apex corium, male, 1.36 mm; females, 1.20 mm; distance apex corium-apex abdomen, male, 1.48 mm; females, 1.48 to 1.56 mm; fore femora rather strongly incrassate, armed below with four or five major spines, the 3rd and 4th spines (from apex) lacking an intervening minor spine, length, 2.44 to 2.48 mm; labium reaching or slightly exceeding caudal margin of fore coxæ, second segment attaining anterior margin of prosternum, basal tarsal segment of hind leg longer than segments two and three combined; antennæ slender-filiform, apical swelling of basal segment occupying less than one-fourth of entire length of segment, terminal segment straight, length I, male, 3.32 mm; females, 2.24 to 2.44 mm; II, male, 2.24 mm; females, 1.56 to 1.72 mm; III, male, 1.52 mm; females, 1.16 to 1.32 mm; IV, 0.96 to 1.04 mm. Total length, 7.24 to 7.56 mm.

Deposition of type.—Unknown.

Deposition of type.—P. fusifemur—Stockholm Museum.

Material examined.—Holotype female of *P. fusifemur* Stål (Caffraria); 1 male, 1 female. SOUTH AFRICA: Sorder End, Oudebosch, altitude 500 ft. Specimens in Stockholm Museum and author's collections.

This species is closely related to *pseudolineata* in form and color. I have not seen the type but German's description fits the male noted above very well and I believe one may well follow Stål in considering this the type species of *Pachygrontha* as exemplified by the above description and the holotype of the synonym *fusifemur* Stål in the Stockholm Museum collection.

PACHYGRONTHA PSEUDOLINEATA sp. nov.

General coloration ferrugineous, markings and vestiture generally as in *lineata,* apical margin of corium with the median

color spot extended anteriorly in an outwardly directed vitta to near base of corium, becoming diffused and best defined near base by a series of conspicuous black punctures; lævigate pale central stripe becoming obsolete at base of head and near posterior margin of pronotum.

General conformation of body as in *lineata:* head, length, 0.88 mm; width across eyes, 0.90 mm; interocular space, 0.56 mm; pronotum, length, 1.28 mm; width, 1.58 mm; scutellum, length, 1.28 mm; hemelytra with distance apex clavus-apex corium, 0.96 mm; distance apex corium-apex abdomen, 1.32 mm; fore femora, length, 1.80 mm; antennæ stouter than in *lineata* apical swelling of basal segment occupying one-third or more of length of entire segment, this clavate condition very gradually enlarged, length I, 1.52 mm; II, 0.92 mm; III, 0.74 mm; IV, 0.68 mm. Total length, 5.52 mm.

Holotype.—Female. Rustenburg, Transvaal, South Africa. December 4, 1951. (A. L. Capener). In Transvaal Museum, Pretoria.

This small species is very closely allied to *lineata* Germar and may prove to be only subspecifically distinct. It may be distinguished from females of *lineata* by the smaller size, the length of the head greater than the length of the third antennal segment, and by the short pronotum which is subequal to the distance from apex corium to apex of abdomen.

PACHYGRONTHA PARALINEATA sp. nov.

General coloration pale yellow; base of scutellum lateral and basal depression on either side of mid-line black; apical margin of corium with a median and apical brown color spot; circular brown patch present along basal margin of membrane adjacent to central color spot of corial margin; thorax castaneous below on mesal portion, with a castaneous pleural vitta extending posteriorly onto first five abdominal sternites; terminal one-half of third tarsal segment dark brown.

Nearly glabrous above, below clothed weakly with appressed sericeous pile; punctures shallow and light brown in color to contrast only slightly with ground color to give species a light pale appearance.

Head broad, convex between the eyes, rather strongly declivent, jugal carinæ low, bent lateral, length head, 1.21 mm; width across eyes, 1.35 mm; interocular space, 0.85 mm; pronotum moderately narrowing anteriorly, lateral margins strongly

sinuate, calloused, transverse impression obsolete, mid-line with a weak calloused stripe becoming obsolete on posterior lobe, length pronotum, 1.78 mm; width pronotum, 2.13 mm; scutellum with a deep basal depression, length, 1.21 mm; hemelytra with a slight lateral expansion, apical corial margin non-calloused, membrane reaching or nearly reaching apex of abdomen; labium with second segment slightly exceeding base of head: fore femora moderately slender, armed below with four major spines, length, 2.41 mm; antennæ slenderly filiform, third segment slightly enlarged to apex, terminal segment nearly straight, length I, 3.12 mm; II, 1.78 mm; III, 1.63 mm; IV, 1.35 mm. Total length, 8.88 mm.

Holotype.—Female, Mauritius (G. Antelme). In British Museum of Natural History.

PACHYGRONTHA ANTENNATA ANTENNATA (Uhler), 1860.

Peliosoma antennata UHLER, Acad. Sci. Phila. Proc. 12 (1860) 229.
Peliosoma antennata WHITE, Nat. Hist. Ann. (4) 14 (1874) 290.
Pachygrontha antennata STÅL, Enum. Hemip. 4 (1874) 141.
Pachygrontha antennata LETHIERRY and SEVERIN, Gen. Cat. Hemip. 2 (1894) 180 (part).
Pachygrontha antennata UHLER, U.S.N.M. Proc. 19 (1896) 264.
Pachygrontha antennata OSHANIN, Verzeich. Pal. Hemip. 1 (1906) 293 (part).
Pachygrontha antennata OSHANIN, Katalog Pal. Hemip. (1912) 293 (part).
Pachygrontha antennata BERGROTH, Arkiv, fur Naturgeschichte 83 (1919) 4.
Pachygrontha antennata MATSUMURA, 6,000 Illust. Ins. Japan-Empire. (1931) 1200.
? Pachygrontha antennata ASAHINA, Mushi 5 (1932) 108.
Pachygrontha antennata HUTCHINSON, Conn. Acad. Arts. Sci. Mem. 10 (1934) 133.
Pachygrontha antennata LINDBERG, Notulae Ent. 14 (1934) 2, 9 (part).
Pachygrontha antennata ESAKI, Icon. Insect. Japon edit. 2 (1950) 226.

General coloration dull testaceous, varying to dull brownish, ochraceous and piceous; general appearance dark for genus; large spot midway along apical corial margin and smaller spot at apex of corium; basal region of scutellum, inner region of calli, lateral areas of head, apical segment of tarsus, mesal areas of thoracic venter and venter of male abdomen except a reddish brown lateral stripe, longitudinal stripe on female venter, profuse spotting on all femora, sometimes entire under surface of fore femora, dark brown to piceous; antennæ

light testaceous, becoming fuscous on apical swelling of basal segment and entire terminal segment; scutellum with piceous base most prominent mesad and bordered laterally by a pair of calloused yellow areas that tend to coalesce meso-caudad.

Clothed below and on head with thick, decumbent, sericeous pile, above nearly glabrous, punctures moderately thick, but shallow and relatively inconspicuous.

Head slightly declivent, slightly tapering cephalad, jugal carinæ low and weak, nearly straight, length head, 1.09 mm (1.04 to 1.16); width across eyes, 1.10 mm (1.04 to 1.16); interocular space, 0.70 mm (0.64 to 0.72); pronotum moderately convex, lateral margins sinuate, transverse impression deep, separating pronotum into two well-defined lobes, strongly tapering cephalad, areas of calli well defined, length pronotum, 1.60 mm (1.52 to 1.72), width pronotum, 1.84 mm (1.72 to 1.94); scutellum with a deep transverse basal depression, followed by a swollen ridgelike area, median carina present caudad of the swollen area, length scutellum, 1.09 mm (1.04 to 1.16) hemelytra with margins abruptly expanded in area of apex of scutellum, hence continued nearly straight for remainder of length, apical corial margin non-calloused, membrane just reaching apex of abdomen or somewhat shorter, hemelytra usually covering abdominal connexivum in males, connexivum conspicuously exposed in females, distance apex clavus-apex corium, 1.42 mm (1.32 to 1.60); distance apex corium-apex abdomen, 1.76 mm (1.68 to 2.00); labium extending caudad onto anterior one-third of mesosternum, second segment exceeding anterior margin of prosternum by over one-half its length; fore femora very greatly thickened, appearing short and thick, armed below with four major spines, usually with two or three minor spines between each of the major ones, length fore femora, males, 2.40 mm (2.28 to 2.52); females, 2.03 mm (2.00 to 2.08); basal tarsal segment appreciably longer than segments two and three combined; antennæ slender, filiform, apical swelling of basal segment occupying one-fourth or less length of entire segment, terminal segment somewhat curved, length I, males, 3.95 mm (3.68 to 4.16); females, 1.95 mm (1.84 to 2.04); II, males, 2.76 mm (2.56 to 2.92); females, 1.27 mm (1.22 to 1.36); III, males 1.97 mm (1.88 to 2.04); females, 1.08 mm (1.04 to 1.12); IV, males, 0.99 (0.96 to 1.00); females, 0.80 to 0.88 mm. Total length, males, 7.62 mm (7.12 to 7.80); females, 7.17 mm (7.04 to 7.28).

Deposition of type.—United States National Museum.

Material examined.—8 males, 10 females. JAPAN: Honshu Island, Kobe, Simodah, Mt. Myoken (Settsu Province), Mt. Rokko (Settsu Province; Kyushu Island, Kashii (Chikuzen). Japan—no definite locality. Specimens in United States National Museum, Kyushu University, Stockholm Museum, Museum of Comparative Zoology (Harvard), British Museum, Vienna Museum, South Australian Museum, and author's collections.

I consider the Japanese *antennata antennata* subspecifically distinct from the predominately mainland form *antennata nigriventris*. These two forms can be separated reliably only on the basis of the male antennal segments, that run considerably shorter in *nigriventris*, which has a ratio of length pronotum to length first antennal segment of 1.57 to 2.15 with a mean of 1.77. A single male specimen from Hokaido agrees very closely with the cotype specimen examined of *nigriventris* and possibly further collection will show intergradation in northern Japan and the Kurile Islands. Further as single specimen from Kwantung has a pronotal-antennal ratio of 2.15 thus approaching typical *antennata*. Four males in the Museum of Comparative Zoology collections from Anwhei and Hupei, China appear to be typical *antennata*. It appears that the distribution of these forms is complex and cannot be considered a simple island-mainland phenomenon. It is entirely possible that the two subspecies may also intergrade in Korea, but unfortunately specimens from this critical area are lacking. *Nigriventris* appears to be geographically isolated from *similis* but may be separated from the latter by the characters noted to separate *similis* and the nominal form of *antennata* with the exception of the antennal ratios and sometimes the coloration of the two distal antennal segments.

Distribution.—This subspecies is known only from Japan and China. The records of Lindberg (1927 and 1934) from Siberia and Amur are referable to *nigriventris* Reuter. Asahina (1932) reports *antennata* from the Ryukyu Islands, but notes a size of 10 mm which is considerably larger than any specimens of *antennata* that I have seen, but fits specimens of *nigrovittata* from Okinawa and the record may well belong there. Several of the Japanese references have accounts of the species that are unintelligible to me and may contain bionomic or distributional notes. Matsumura (1931) and Esaki (1950) give excellent figures of the species. Hutchinson (1934)

utilized this species in his study of the subfamily relationships of the Lygaeidae based upon the position of the abdominal spiracles.

PACHYGRONTHA ANTENNATA NIGRIVENTRIS Reuter, 1881, comb. nov.

Pachygrontha nigriventris REUTER, Berlin Ent. Zeit. 25 (1881) 157.
Pachygrontha nigriventris PUTON, Cat. Paleart. Hemip. (1886) 24.
Pachygrontha antennata PUTON, Cat. Paleart. Hemip. 4th edit. (1899) 29.
Pachygrontha antennata LETHIERRY and SEVERIN, Gen. Cat. Hemip. 2 (1894) 180 (part).
Pachygrontha antennata OSHANIN, Verzeich. Pal. Hemip. 1 (1906) 293 (part).
Pachygrontha antennata OSHANIN, Kat. Pal. Hemip. (1912) 293 (part).
Pachygrontha nigriventris BERGROTH, Arkiv. fur Naturgeschichte 83 (1919) 4.
Pachygrontha antennata LINDBERG, Acta. Soc. Faun. Flor. Fenn. 56 (1927) 9.
Pachygrontha antennata LINDBERG, Notulae Ent. 14 (1934) 2, 9 (part).

Very closely related to *P. antennata antennata* in form, color and most structural details. Females indistinguishable. Males with shorter fore femora than typical *antennata*, length males, 2.17 mm (2.06 to 2.20); females, 2.00 mm (1.96 to 2.04); and with much shorter antennæ as noted in the couplet above.

Head, length, 1.07 mm (1.04 to 1.12); width across eyes, 1.10 mm (1.08 to 1.14); interocular space, 0.69 mm (0.64 to 0.72); pronotum, length, 1.58 mm (1.48 to 1.68); width pronotum, 1.86 mm (1.76 to 1.96); scutellum, length, 1.05 mm (0.96 to 1.12); hemelytra with distance apex clavus-apex corium, 1.40 mm (1.32 to 1.48); distance apex corium-apex abdomen, 1.71 mm (1.56 to 1.80); length antennal segments I, males, 2.80 mm (2.60 to 3.08); females, 1.72 to 1.92 mm; II, males, 1.90 mm (1.72 to 2.12); females, 1.20 to 1.28 mm; III, males, 1.41 (1.32 to 1.52); females, 0.98 to 1.12 mm; IV, 0.88 mm. Total length, males, 7.25 mm (7.08 to 7.60); females, 7.39 mm (7.24 to 7.56).

Deposition of type.—Lindberg (1951) indicates the type as being in the Helsinki collections. The Stockholm Museum possesses a specimen labeled "type." It appears that Reuter actually did not designate a holotype specimen. Since the Helsinki material has not been available to me I have not designated here the lectotype of this species.

Material examined.—22 males, 23 females. SIBERIA: Vladivostok. CHINA: Manchuria Province; Honan Province, Chen-Chow; Kiangsu Province, Nanking; Anhwei, Kiuhua Shan, Taipingshien; Hopei, Wuchang, Tygosan Island. JAPAN: Hokkaido Island, Nishiashoromura. Specimens in United States National Museum, British Museum, Stockholm Museum, Museum of Comparative Zoology (Harvard), Senkenberg Museum, Kyushu University, and author's collections.

This subspecies appears to be widely distributed in southern Siberia and northern China. The Japanese records are the first for the race and probably indicates an area of intergradation on Hokkaido or in the Kurile Islands. It is quite probable that ultimately additional races of this species will be found to be present in north-eastern Asia. The male specimen from Nanking examined differs from the rest of the material in being appreciably smaller (6.20 mm), but having antennae almost as long as in the larger specimens and thus approaching typical *antennata,* which is present in Anhwei and Hopei.

PACHYGRONTHA SIMILIS Uhler, 1896.

Pachygrontha similis UHLER, U.S.N.M. Proc. 1108 19 (1896) 264.
Pachygrontha similis OSHANIN, Verzeich. Paleark, Hemip. (1912) 293.

General coloration testaceous; prominently marked with black to dark castaneous as follows: entire head, terminal swelling of first antennal segment, fourth segment, greater portion of pronotal calli, especially mesad, a pair of stripes from area of calli to base of pronotum along either side of meson, spot near caudo-lateral pronotal angles, basal one-half of scutellum other than a pair of yellow calloused spots near base midway between meson and lateral margin, inner half of clavus but becoming lighter toward base, large spot at apex of corium, broad longitudinal stripe beginning midway along apical margin of corium and extending anteriorly through central area of corium nearly to base, three pairs of conspicuous spots dorsally on caudo-lateral edge of fifth, sixth, and seventh abdominal connexival tergites, spot on sixth tergite the largest, greater portion of entire ventral surface, profuse spotting on femora becoming solid black ventrally on fore femora; pronotum with a median yellow stripe becoming obsolete cephalad of calli, scutellum with median stripe on apical half; clothed below and on head with sericeous decumbent pile.

Head convex, prominently declivent, jugal carinæ low, narrowing anteriorly, length head, 0.99 mm (0.85 to 1.08) ; width across eyes, 1.14 mm (1.07 to 1.14) ; interocular space, 0.71 mm (0.64 to 0.78) ; pronotum very slightly narrowed anteriorly, lateral margins strongly sinuate, transverse impression broad and shallow, anterior lobe strongly convex and noticeably longer than posterior lobe, surface shining, length pronotum, 1.56 mm (1.42 to 1.78) ; width pronotum, 1.70 mm (1.56 to 1.92) ; scutellum with a prominent median carina on apical one-half, basal depression deep with strong resultant transverse ridge, length scutellum, 0.92 mm (0.85 to 1.08) ; hemelytra with lateral margins sharply expanded just beyond apex of scutellum hence strongly tapering to apex of membrane, leaving connexivum broadly exposed from fifth abdominal tergite caudad, membrane reaching only midway onto basal tergite in both sexes, distance apex clavus-apex corium, 1.28 mm (1.14 to 1.42), distance apex corium-apex abdomen, 1.35 mm (1.49 to 1.92) ; labium extending onto anterior portion of mesosternum, second segment slightly exceeding base of head; fore femora extremely incrassately thickened, armed below with four major stubby spines, length males, 2.20 mm (2.06 to 2.34) ; females, 1.92 mm (1.85 to 2.00) ; antennæ short and relatively thick, terminal segment nearly straight, length I, males, 2.77 mm (2.13 to 3.27) ; females, 1.78 mm (1.49 to 1.96) ; II, males, 1.99 mm (1.78 to 2.34) ; females, 1.14 mm (0.99 to 1.21) ; III, males, 1.56 mm. (1.42 to 1.78) ; females, 0.99 mm (0.92 to 1.06) ; IV, males, 0.92 mm (0.92 to 0.99) ; females, 0.85 mm (0.78 to 0.92). Total length, 6.96 mm (6.32 to 7.81).

Deposition of type.—United States National Museum No. 3100.

Material examined.—7 males, 8 females. JAPAN: Kyushu Island, Inunakiyama (Chikuzen), Mt. Kosho (Chikuzen), Wakasugiyama (Chikuzen), Magarifuchi (Chikuzen), Tsukumishima (Bungo), Kujusan (Bungo) ; Honshu Island, Mt. Kasuga (near Nara), Tokyo. Simodah. Specimens in United States National Museum, British Museum, Kyushu University, Museum of Comparative Zoology (Harvard), Stockholm Museum, R. L. Usinger, author's collections.

The two Japanese forms *similis* and *antennata* are distinct sympatric species apearing to occupy much the same range at least on Honshu and Kyushu, although of course there may be ecological differentiation of which I am unaware. *P. similis* is a smaller species, possesses a much more convex anterior

pronotal lobe (a character extremely useful for specific separation but difficult to interpret without specimens of both species for comparison), has the abdominal connexivum expanded beyond the lateral margins of the hemelytra, is usually strongly shining, has the black spot midway along the apical corial margin extended cephalad as a distinct black stripe. The terminal antennal segment is blackish and strongly contrasting with the preceding light yellowish segment in contrast to *antennata* where the third and fourth antennal segments are nearly unicolorous. The abdominal connexivum possesses three pairs of prominent black spots along the margin, the most anterior of these lying contiguous with the apex of the corium, while *antennata* may possess one or even two pairs of inconspicuous spots these always lie considerably caudad of the apex of the corium. The antennal lengths of the males are quite distinct in the two forms: In *similis* the ratio of length of pronotum to first antennal segment is 1.50 to 1.86 with a mean of 1.71, whereas *antennata* has a ratio of 2.05 to 2.77 with a mean of 2.36.

PACHYGRONTHA AFRICANA sp. nov.

General coloration dull grayish, usually becoming noticeably darker on head; two small blackish spots on apical margin of corium, one at apex, second midway along apical margin; caudo-lateral pronotal angles bearing a conspicuous blackish spot; first two antennal segments femora and tibiæ bearing numerous brown spots; third antennal segment cinereous except at basal one-sixth; punctures dark brown over entire surface becoming blackish and closely set near lateral margins of pronotum; head below, mesal area of thoracic sternum, fore coxæ and second and third tarsal segments dark brown to blackish; clothed both above and below with short, appressed sericeous pubescence.

Head nearly straight, strongly declivent beyond antennal insertion, jugal carinæ low, inconspicuous, slightly bent laterad on posterior portion, length head, 1.05 mm (0.99 to 1.14); width head, 1.21 mm; interocular space, 0.72 mm (0.77 to 0.74); pronotum broad, strongly tapering cephalad, lateral margins nearly straight, only slightly calloused, meson with weak longitudinal lævigate stripe, becoming obsolete posteriorly, transverse impression obsolete, length, 1.64 mm (1.49 to 1.78); width pronotum, 1.98 mm (1.92 to 2.06); scutellum relatively elongate with faint median carina on apical half, moderately developed

transverse ridge and resultant basal depression, length scutellum, 1.24 mm (1.21 to 1.30); hemelytra with lateral margins slightly expanded near apex of scutellum, membrane reaching apex of abdomen, apical corial margin non-calloused, distance apex clavus-apex corium, 1.55 mm (1.49 to 1.63) apex corium-apex abdomen, 2.06 mm (1.85 to 2.20); labium reaching anterior portion of mesosternum, second segment barely reaching base of head; fore femora very strongly incrassate, armed below with four major spines, length fore femora, 2.36 mm (2.27 to 2.48); antennæ slenderly filiform, length segments I, male, 3.41 to 3.48 mm; female, 2.14 mm (1.92 to 2.48); II, male, 2.27 to 2.34 mm; female, 1.32 mm (1.18 to 1.42); III, male, 1.78 to 1.85 mm; female, 1.26 mm (1.16 to 1.35); IV, 0.88 mm (0.72 to 0.99). Total length, 8.12 mm (7.81 to 8.38).

Holotype.—Male, Bassin Lukuga, Belgian Congo. 1935 (H. De Saeger). In Musée du Congo.

Paratypes.—2 males, 10 females, BELGIAN CONGO: Bassin Lukuga, Kungolo, Welgelegen, Nyangwe. DAHONEY: Koussoukoingou. FRENCH WEST AFRICA: Ifan, Bassila, Atakora. Specimens in Institut Francais du Afrique Noire, Musée du Congo, United States National Museum, and author's collections.

PACHYGRONTHA ROBUSTA sp. nov.

General coloration reddish-brown, becoming darker laterad on pronotum and near base of scutellum; apical corial margin without definite spots, but caudal three-fourths of margin blackish, this continuing some distance cephalad near center of corium somewhat as in *bakeri;* median scutellar carina apically and raised callosities near base bright yellow, membrane dusky, femora spotted with brown, dark brown on ventral half.

Very closely and heavily punctured, those on corium closely and evenly placed and very distinctive of the species.

Head broad, only slightly declivent, jugal carinæ rather low and evenly parallel, length head, 1.21 mm; width across eyes, 1.29 mm, interocular space, 0.85 mm; pronotum broadly, evenly tapering cephalad, lateral margins narrowly calloused, transverse impression obscurely indicated, meson with a narrow, faint lævigate stripe becoming obsolete both anteriorly and posteriorly, length pronotum, 1.92 mm; width pronotum, 2.41 mm; scutellum with a prominent median carina posteriorly, a strongly raised transverse ridge and well defined basal depression, length scutellum, 1.28 mm; hemelytra with lateral corial margins nearly

straight, apical corial margin non-calloused, membrane extending onto basal portion of terminal abdominal tergite, distance apex clavus-apex corium, 1.63 mm; distance apex corium-apex abdomen, 2.34 mm; labium very long, extending caudad nearly to the mesocoxæ, second segment exceeding base of head by one-half or more its length; fore femora heavily incrassate, armed below with four black-tipped major spines, length, 2.63 mm, basal matatarsal segment longer than segments two and three combined; antennæ with prominent hairs, third segment somewhat broadened from base to apex, length antennal segments I, 2.63 mm; II, 2.13 mm; III, 1.56 mm; IV, 0.85 mm. Total length, 9.09 mm (approximate).

Holotype.—Female. Brisbane, Queensland, Australia. 18–9–14. (H. Hacker). In British Museum.

I have described this species on the basis of a partially mutilated female because of the distinctive nature of the specimen. This species is not closely allied to any other species known to me. It may readily be distinguished by the distinctive nature of the corial punctures and especially by the elongate labium which will serve to separate the species from most other members of the genus.

PACHYGRONTHA WALKERI Distant, 1901.

Pachygrontha walkeri DISTANT, Nat. Hist. Ann. (7) 8 (1901) 473.

General coloration ochraceous to castaneous, shining; head, area of calli, caudo-lateral pronotal angles, base of scutellum, area of claval commissure, central region along corial margin membrane at base, apex corium, mesal area of thorax below, apical swelling on first antennal segment, apical one-fourth of segment two and greater portions of segments three and four, dark castaneous to piceous; entire fore femora and apical half of middle and hind femora dark reddish-brown, becoming almost piceous in dark specimens; females with dark brown longitudinal vitta on abdominal venter and in area surrounding ovipositor.

Clothed below and along lateral areas of head with decumbent, sericeous pile.

Head relatively short and broader than long, side margins slightly expanded to bases of antennæ, jugal carinæ low, nearly straight and inconspicuous, length head, 1.01 mm (0.96 to 1.06); width across eyes, 1.11 mm (1.06 to 1.12); interocular space, 0.64 mm (0.62 to 0.66); pronotum with lateral margins strongly rounded, sinuate, weakly calloused, transverse impression deep,

dividing disc into two prominently defined lobes, median pale lævigate line prominent, becoming obsolete before posterior margin, length pronotum, 1.53 mm (1.48 to 1.64); width pronotum, males, 1.67 mm (1.60 to 1.72); females, 1.76 mm (1.68 to 1.80); scutellum with a pale median stripe becoming lævigate and calloused near apex, basally scutellum somewhat swollen, a pair of small yellow calloused spots near base on either side of median line, length scutellum, 1.02 mm (0.92 to 1.08); hemelytra with lateral margins straight for entire length, apical margin of corium non-calloused, distance apex clavus-apex corium, males, 1.40 mm (1.36 to 1.48); females, 1.27 mm (1.24 to 1.36); distance apex corium-apex abdomen, males, 2.14 mm (1.96 to 2.32); females, 1.86 mm (1.80 to 1.96), membrane not reaching apex of abdomen, extending only onto anterior margin of last pregenital segment; labium extending onto anterior one-third of mesosternum, second segment reaching or somewhat exceeding anterior margin of prosternum; fore femora moderately incrassate, armed below with four major spines, length males, 2.51 mm (2.36 to 2.64); females, 2.10 mm (2.00 to 2.24); antennæ slender, filiform apical swelling of basal antennal segment occupying less than one-fourth of entire length of segment, length I, males, 4.04 mm; females, 2.32 mm (2.24 to 2.50); II, males, 2.98 mm; females, 1.52 mm (1.48 to 1.60); III, males, 2.22 mm; females, 1.28 mm (1.22 to 1.32); IV, males, 1.08 mm; females, 0.91 mm (0.88 to 0.96). Total length, males, 7.66 mm (7.20 to 8.08); females, 7.10 mm (6.88 to 7.44).

Deposition of type.—British Museum.

Material examined.—5 males, 5 females, Darwin, Australia. Specimens in United States National Museum, So. Australian Museum, Stockholm Museum, H. M. Harris, and author's collections.

Dr. Izzard of the British Museum has kindly compared a male from the above noted series with the type and confirms the determination.

Distant in the original description states that the posterior femora are incrassated and spinous, but this is certainly a *lapsus* for anterior femora.

PACHYGRONTHA LEWISI Distant, 1901.

Pachygrontha lewisi DISTANT, Nat. Hist. Ann. (7) 8 (1901) 474.

Pachygrontha lewisi DISTANT, Fauna. Brit. India. Rhynch. 2 (1904) 40–41. (*Fig.*)

Pachygrontha lewisi BERGROTH, Philip. Jour. Sci. 13 (1918) 72.

General coloration testaceous, marked with chocolate-brown as follows: lateral margin of antenniferous tubercles, area adjacent to median line on vertex, inner edge of calli and extending caudally on posterior lobe along either side of mid-line, irregular spot near lateral edge of calli, caudolateral angles of pronotum, inner edge of clavus, very large spot near middle of apical corial margin and smaller spot at apex of corium; membrane with pair of conspicuous brown stripes, femora profusely brown spotted; below marked with black mesally on prothorax and with a black vitta midway along pleuron, continuing as an obscure brown vitta on abdominal venter which also bears a narrow median brown stripe, fore and middle coxæ castaneous; pronotum with median yellow lævigate stripe, scutellum black at base, apically yellow and this diverging basad into a pair of yellow callosities; basal area of membrane white, nearly glabrous above, below clothed with decumbent sericeous pile.

Head elongate, slender, clypeus tapering, relatively little declivent, jugal carinæ low and straight, length head, 1.14 mm, width across eyes, 1.14 mm; interocular space, 0.64 mm; pronotum strongly tapering anteriorly, lateral margins weakly sinuate, transverse impression broad and shallow, but plainly indicated, posterior lobe swollen on either side of mid-line, length pronotum, 1.78 mm; width pronotum, 2.13 mm; scutellum with a strongly developed basal depression and resultant adjacent transverse ridge, length, 1.28 mm; hemelytra with lateral margins moderately expanded near apex of scutellum, apical margins non-calloused, membrane reaching terminal abdominal tergite, distance apex clavus-apex corium, 1.56 mm; distance apex corium-apex abdomen, 2.48 mm; labium long, extending caudad nearly to middle of mesosternum, second segment exceeding base of head by nearly one-half its length; fore femora moderately incrassate, armed below with 4 short stubby major spines, length, 2.63 mm; antennæ slenderly filiform, length I, 4.40 mm; II, 3.41 mm; III, IV—missing. Total length, 8.73 mm.

Deposition of type.—British Museum.

Material examined.—1 male, CEYLON. (Vienna Museum.)

The figure of this species given by Distant (1904) shows spines projecting from the sides of the abdominal connexivum. Mr. Izzard kindly informs me that this is not true of the type specimen. Otherwise the figure appears to be quite accurate. Distant reports it as being taken from "tufts of *Cyperus* sp."

Thus far *lewisi* is known definitely only from Ceylon. However, in the United States National Museum material is a male from Hainan Island, in poor condition that either belongs here or to a closely related undescribed species. *Lewisi* may be readily recognized by the elongate labium, characteristic color markings and other characters mentioned in the key.

PACHYGRONTHA ANGULARIS Reuter, 1887.

Pachygrontha angularis REUTER, Ent. Tidsk. 8 (1887) 95.
Pachygrontha angularis LETHIERRY and SEVERIN, Gen. Cat. Hemip. 2 (1894) 180.

The original description of this species fits *P. africana* sp. nov. rather well, particularly in some of the color details. However, I have not seen the type which was described from Nossibe, Madagascar and in view of the isolated zoogeographic position of Madagascar, I have not felt justified in considering the West African material as representing this species.

Important characteristics noted by Reuter include the possession of four major spines on the fore femora, a median and apical black spot on the apical corial margin, dark spots at the caudo-lateral pronotal angles, labium not exceeding the anterior coxæ and a length of seven and one-third millimeters.

Deposition of type.—Presumably in Helsinki University collection.

PACHYGRONTHA SOLIERE (Montrouzier), 1864.

Dilophos solieri MONTROUZIER, Soc. Linn. Lyon Ann. *n.s.* 2 (1864) 226.
Pachygrontha solieri STÅL, Enum. Hemip. 4 (1874) 141.
Pachygrontha solieri LETHIERRY and SEVERIN, Gen. Cat. Hemip. 2 (1894) 181.

This species was decribed from New Caledonia and appear not to have been definitely recognized since the original description. Montrouzier's description is so general, although almost certainly that of a *Pachygrontha,* as to fit nearly any species with the exception of the total length which is given as 11 mm. This would seem to relate the species to *longicornis* or perhaps *semperi.* Distributionally the species locality lies eastward of any material studied by the present author, but with *harrisi* from Guadalcanal (a smaller species) as the nearest locality record.

In view of the isolated zoogeographic position of New Caledonia it seems advisable to retain *solieri* as a valid species until material from New Caledonia is available for study.

Deposition of type.—Unknown. Possibly Museum Montpellier. (Probably destroyed).

Genus ŒDANCALA Amyot and Serville, 1843

Œdancala Amyot and Serville, Hemip. Hist. Nat. Ins. (1843) 258.
Œdancala Stål, Enum. Hemip. 4 (1874) 138–139.
Œdancala Provancher, Pet. Faune Ent. Can. 3 (1886) 72.
Œdancala Lethierry and Severin, Gen. Cat. Hemip. 2 (1894) 180.
Œdancala Barber, Psyche 24 (1917) 134–135.
Œdancala Van Duzee, Hemip. Cat. (1917) 174.
Œdancala Torre Bueno, Can. Ent. 57 (1925) 29.
Œdancala Blatchley, Heteropt. E.N. Amer. (1926) 382.
Œdancala Usinger, Pan. Pacif. Ent. 14 (1938) 83.
Œdancala Torre Bueno, Ent. Amer. 26 (1946) 52–53.
Œdancala Barber, Soc. Cubana Hist. Nat. Mem. 19 (1947) 72.

Type species: *Œdancala dorsilinea* Amyot and Serville, 1843. = *Lygæus crassimana* Fabricius, 1803. Monobasic.

General coloration testaceous; coarsely punctured on head, pronotum scutellum, hemelytra and thoracic pleurites: Eyes large and elliptical, usually touching anterior margin of pronotum, length of eye greater than preocular length; clypeus considerably exceeding jugæ, the latter with a low carination along lateral margin; bucculæ short, ovoid, not extending caudad to region of antennal bases; antennæ usually shorter than body, either incrassate or slender, basal segment considerably exceeding apex of clypeus, gradually enlarged to apex, three distal antennal segments usually nearly subequal, apical segment straight, never strongly curved; pronotum generally tapering markedly from base to apex, side margins either rounded or weakly calloused; membrane extending to or just beyond apex of abdomen; fore femora strongly incrassate, armed below with three or four major spines that are intermixed with smaller spines; apex of fore tibiæ with a prominent projecting tooth; venter of male usually brownish-castaneous; female venter usually straw-yellow bearing a longitudinal brown vitta midway between meson and margin.

Œdancala is very closely related to some species of *Pachygrontha* and perhaps is questionably distinct. In the western hemisphere *P. compacta* Distant and *P. œdancalodes* Stål appear to be somewhat transitional between the two genera, perhaps through *Œdancala nana* sp. nov. Indeed the two were placed in *Œdancala* by Barber (1947). However, I have not left that these species should be placed in *Œdancala* as such a step would not ease the difficulty of establishing definitive characters to separate the two genera when the species are considered from a

world-wide standpoint. Mr. Barber's (1947) generic characters while useful for the Western Hemisphere are insufficient in most cases to separate the two groups. The preocular margin is longer than the length of the eye in *œdancalodes* and slightly longer than, or equal to, the length of the eye in *compacta*. However, in all members of *Œdancala*, if these two species be considered in *Pachygrontha* the length of the eye is greater than the preocular space (measured to the apex of the antenniferous tubercle). In all species of *Pachygrontha* known to me the length of the eye is less than the preocular space (sometimes equal in *compacta*) and this character that reflects the different shape of the eye in the two genera will serve as a basis for separation. This may also be expressed as: eye as broad or broader than long in *Pachygrontha* and eye longer than broad in *Œdancala*. In regard to the other characters used by Mr. Barber (1947): the head is longer than wide in *Œdancala meridionalis, cubana, longirostris* and some specimens of *nana* and *crassimana;* the antennæ are slender or filiform in *Œdancala bimaculata, notata, mexicana, nana,* and *longirostris;* the basal segment of the antennæ shows much variation in the degree of enlargement of the distal region in both genera and is scarcely definitive as a generic character; the pronotum is wider than long in almost all species of *Pachygrontha*. While definite characters to absolutely distinguish the two genera are few, there are, as pointed out by Mr. Barber, many characteristics of each genus that are valuable aids to separation in most cases. The majority of species of *Pachygrontha* are relatively elongate and slender insects compared to *Œdancala* species and in the former the antennæ are usually very elongate, filiform and usually have an abrupt capitate apical region to the basal segment. In *Œdancala* the antennæ may be slender or incrassated, and the basal segment is usually less abruptly capitate, the enlargement being more gradual and illustrating a more clavate condition. In most species of *Œdancala* the apical antennal segment is nearly subequal to the second and third segments respectively, whereas in most species of *Pachygrontha* the apical segment is much shorter than either of the preceding segments and is frequently very strongly curved. Many species of *Pachygrontha* show striking sexual dimorphism, the males having greatly elongated antennæ, this condition occurs in *Œdancala cubana,* but is only slightly if at all evident in the other species of the genus.

The male gonostyli will serve to separate the genus into three groups, the first having gonostyli of the *dorsalis* type (Plate 3, fig. 2) includes *dorsalis, crassimana, meridionalis, mexicana, cubana,* and *kormilevi*; a second group that possesses gonostyli with a broad flattened apex may be called the *bimaculata* group (Plate 3, fig. 4) and comprises *bimaculata, longirostris, nana,* and probably *husseyi*; a third and distinct type of gonostylus is possessed by *notata* (Plate 3, fig. 1) and this gonostylus differs from the *dorsalis* type primarily in the much greater distance between the apex and the median tooth.

Geographic distribution.—The genus *Œdancala* is confined in distribution to the western hemisphere and its members may be found from Canada to Argentina. Judging from present evidence the center of origin possibly lies in Central America and northern South America as within this region examples of all 3 groups represented in the genus may be found and by far the greater number of species. It appears likely that future studies may show more speciation in the West Indies than is evident at the present time.

Œdancala has probably been derived as an offshoot of the tropicopolitan genus *Pachygrontha* in Central America from an ancestral form similar to *Pachygrontha compacta*, a species, as mentioned before, that is somewhat intermediate between the two genera.

The northward extension of the genus into Canada and the United States through *dorsalis* almost certainly represents a northward radiation from the tropics and probably is not through *crassimana* but an ancestral form more similar to *meridionalis*.

The feeding habits and bionomics of most of the species are unknown. They appear not to be zoophagous despite the raptorial appearance of the fore femora. The various species are probably all sedge, rush and marsh grass feeders judging by what is known of the feeding habits of *dorsalis* and *crassimana*.

Key to the species of Œdancala

1. Apical margin of corium possessing two dark spots, one on the apex, the second midway between apex of corium and apex of claval commissure ..... 2.
   Apical corial margin not possessing two dark spots, corial margin either with a diffused darkened area, a median spot or immaculate .... 3.
2. Punctures on head and pronotum black, strongly contrasting with ground color ..... *O. mexicana* sp. nov.
   Punctures on head and pronotum testaceous to tan, never black or strongly contrasting with ground color..... *O. kormilevi* sp. nov.

3. Apical margin of corium immaculate, lacking a diffused dark area or a median color spot ..... 4.
   Apical margin of corium with a median spot, or a diffused darkened area along the margin ..... 7.
4. Basal segment of labium very long, extending caudad at least to the anterior margin of the eye; second labial segment exceeding anterior margin of thorax by at least one-half its length ..... 5.
   Basal segment of labium short, not extending caudad of base of antennæ; second labial segment scarcely if at all exceeding anterior margin of thorax, when exceeding margin then by much less than one-half its length ..... 6.
5. Scutellum with a prominent black median vitta; length of first antennal segment considerably less than width of head across eyes. [0.88 mm (0.84 to 1.00)–1.10 mm (1.08 to 1.14)] ..... *O. dorsalis* Say
   Scutellum pale yellowish, never with a black median vitta; length of first antennal segment considerably greater than width of head across eyes. [1.25 mm (1.20 to 1.32)–1.07 mm (1.00 to 1.12).] *O. longirostris* sp. nov.
6. First antennal segment much longer than length of pronotum and longer than antennal segments two and three combined. *O. cubana* Stål
   First antennal segment considerably shorter than length of pronotum, not as long as antennal segments two and three combined. *O. meridionalis* Stål
7. Fore femora with ventral spines confined to apical half, never with more than three major spines present; second antennal segment appreciably shorter than segment three (ratio of segment two to segment three, 1.23 to 1.31) ..... *O. nana* sp. nov.
   Fore femora with ventral spines extending proximad of apical half, for major spines present; second antennal segment nearly subequal to segment three (maximum ratio of segment two to segment three, 1.12) ..... 8.
8. Ratio of interocular space to width of pronotum usually 2.7 or greater, if less than 2.7 median area of head nearly glabrous, strongly contrasting with sericeous pubescence of lateral areas, and pronotum usually suffused with reddish brown ..... 9.
   Ratio of interocular space to width of pronotum less than 2.7, usually about 2.5 to 2.6; antennæ slender, median area of head sparsely pubescent, pubescence of lateral areas of head not strongly contrasting, pronotum never suffused with reddish-brown; gonostyli distinctive (Plate 3, fig. 10) ..... 10.
9. Length of fore femora more than two and one-half times the length of the second antennal segment; antennæ thick and incrassate (less so in many females); pronotum not strongly suffused with dark reddish-brown; fourth antennal segment slightly longer than segment three ..... *O. crassimana* (F.)
   Length of fore femora less than two and one-half times length of second antennal segment; antennæ slender and filiform; pronotum frequently strongly suffused with dark reddish-brown; fourth antennal segment slightly shorter than segment three..... *O. notata* Stål

10. Length of pronotum considerably greater than distance apex corium-apex abdomen; ratio of length to width pronotum less than 1.25; eyes appearing slightly pedunculate, caudo-lateral angles somewhat free from head ..... *O. husseyi* sp. nov.

Length of pronotum less than or subequal to distance apex corium-apex abdomen; ratio of length to width pronotum greater than 1.25 (usually over 1.3); eyes appearing more flattened against head for entire margin, never appearing somewhat pedunculate.

O. bimaculata Dist.

ŒDANCALA DORSALIS (Say), 1832.

Pumera dorsalis SAY, Heter. N. Harm. (1832) 17. (Fitch reprint p. 779).

Œdancala crassimana STÅL, Enum. Hemip. 4 (1874) 139. (Part).

Œdancala dorsalis UHLER, U. S. Geol. Geog. Surv. Terr. Bull. 1 (1876) 307. (Part).

Œdancala dorsalis UHLER, U. S. Geol. Geog. Surv. Terr. Bull. 3 (1877) 411. (Part).

Œdancala crassimana PROVANCHER, Pet. Faune Ent. Can. 3 (1886) 73.

Œdancala dorsalis VAN DUZEE, Psyche 5 (1888) 27.

Œdancala dorsalis SMITH, Geol. Surv. N.J. pt. 2 2 (1890) Zool. 423.

Œdancala dorsalis OSBORN, Ia. Acad. Sci. Proc. pt. 2 1 (1892) 122.

Œdancala dorsalis OSBORN, Ia. Acad. Sci. Proc. pt. 4 1 (1894) 122.

Œdancala dorsalis VAN DUZEE, Buff. Soc. Nat. Sci. Bull. 5 (1894) 174.

Œdancala dorsilinea LETHIERRY and SEVERIN, Gen. Cat. Hemip. 2 (1894) 180. (Pt.)

Œdancala dorsalis MONTGOMERY, Ent. News 13 (1902) 13.

Œdancala dorsilinea WIRTNER, Carn. Mus. Ann. 3 (1904) 193.

Œdancala dorsalis MONTGOMERY, Amer. Phil. Soc. Trans. (N.S.) 21 (1906).

Œdancala dorsalis VAN DUZEE, Buff. Soc. Nat. Sci. Bull. 9 (1909) 170.

Œdancala crassimana TORRE BUENO, N. Y. Ent. Soc. Jour. 18 (1910) 28.

Œdancala crassimana SMITH, Cat. Ins. N. J. Edn. 3 (1910) 143.

Œdancala dorsalis BANKS, Nearct. Hemip. Heter. Cat. (1910) 60. (Pt.)

Œdancala dorsalis VAN DUZEE, Can. Ent. 44 (1912) 319.

Œdancala dorsalis PARSHLEY, Psyche 21 (1914) 146.

Œdancala dorsalis PARSHLEY, Occ. Pap. Boston Soc. Nat. Hist. 7 (1917) 46.

Œdancala dorsalis VAN DUZEE, Hemip. Cat. (1917) 175.

Œdancala dorsalis DRAKE, N. Y. St. Coll. Forestry. Tech. Bull. (16) 22 (1922) 63.

Œdancala dorsalis HUSSEY, Occ. Pap. Mus. Zool. U. Mich. 118 (1922) 21.

Œdancala dorsalis PARSHLEY, S. Dak. St. Coll. Tech. Bull. 2 (1922) 10.

Œdancala dorsalis BARBER, Conn. Geol. Nat. Hist. Surv. Bull. 34 (1923) 721.
Œdancala dorsalis TORRE BUENO, Brook Ent. Soc. Bull. 20 (1925) 70.
Œndancala dorsalis BLATCHLEY, Heteropt. E. N. Amer. (1926) 382–383.
Œdancala dorsalis TORRE BUENO, Brook Ent. Soc. Bull. 21 (1926) 54.
Œdancala dorsalis BARBER, Corn. U. Agr. Exp. Stat. Mem. 101. (1928) 95.
Œdancala dorsalis HENDRICKSON, Ia. State Coll. Jour. Sci. 4 (1930) 71.
Œdancala dorsalis HARRIS, Ia. State Coll. Jour. Sci. 11 (1937) 173.
Œdancala dorsalis BRIMLEY, Ins. N. Car. (1938) 68.
Œdancala dorsalis MOORE, Can. Ent. 76 (1944) 40.
Œdancala dorsalis FROESCHNER, Amer. Midl. Nat. 31 (1944) 642, 661.
Œdancala dorsalis TORRE BUENO, Ent. Amer. 26 (1946) 53.
Œdancala dorsalis BARBER, Ent. Soc. Wash. Proc. 51 (1949) 273.
Œdancala dorsalis MOORE, Contrib. Instit. Biol. U. Montreal 26 (1950) 13.
Œdancala dorsalis SLATER, Ia. Acad. Sci. Proc. 58 (1952) 559–561.
Œdancala dorsalis SLATER, Ia. Acad. Sci. Proc. 59 (1952) 531.

General coloration grayish testaceous, head and calli light brown; head at base, broad central stripe and lateral margin of scutellum black; claval commissure, venter and dorsum of abdomen, fore femora below, mesal area of meso- and metasternum dark brown; apical corial margin immaculate, lacking prominent dark spots; pronotum with a conspicuous pale lævigate median stripe usually continued on the head, lateral margins of pronotum calloused anteriorly and pale, as is the abdominal connexivum; punctures large, coarse and usually black on the pronotum.

Head elongate, tapering to apex, considerably declivent, clypeus reaching nearly half-way to apex of first antennal segment, length head, 1.04 mm (0.98 to 1.08); width across eyes, 1.10 mm (1.08 to 1.14); interocular space, 0.70 mm (0.68 to 0.72); pronotum broad, strongly tapering cephalad, lateral margins nearly straight, transverse impression absent or obsolete, length pronotum, 1.39 mm (1.28 to 1.52); width pronotum male, 1.88 mm (1.80 to 2.00); female, 1.95 mm (1.92 to 2.00); scutellum with a low median carina, basal depression moderately shallow, length scutellum, 0.92 mm (0.84 to 0.96); hemelytra broad and relatively short, lateral hemelytral margin broadly expanded near apex of scutellum, in this area the distance across the hemelytra is greater than the basal width of the pronotum, caudad of this expansion connexiva exposed, membrane just reaching apex of abdomen, distance apex clavus-apex corium,

1.05 mm (0.92 to 1.12); distance apex corium-apex membrane, 1.23 mm (1.12 to 1.28); labium long, reaching middle of mesosternum, second segment exceeding anterior margin of prosternum by one-half its length; basal tarsal segment relatively short, scarcely longer than segments two and three combined, fore femora heavily and ovately incrassate, armed below with four major spines, length fore femora, males, 1.73 mm (1.68 to 1.84); female, 1.60 mm (1.56 to 1.68); antennæ thick, incrassated, basal segment short and bent laterad at base of apical thickening, much as in *meridionalis*, length I, 0.88 mm (0.84 to 1.00); II, 0.66 mm (0.62 to 0.72); III, 0.64 mm (0.60 to 0.68); IV, 0.78 mm (0.72 to 0.80). Total length, males, 5.66 mm (5.44 to 5.88); females, 5.87 mm (5.84 to 5.92).

Deposition of type.—Destroyed—Thomas Say collection.

Material examined.—47 males, 41 females: Connecticut, Illinois, Indiana, Iowa, Maryland, Massachusetts, Missouri, Nebraska, New Jersey, New York, North Carolina, Quebec, Tennessee, and Texas.

Distribution.—This distinctive species ranges over most of the northern United States and southern Canada east of the Rocky Mountains and extends southward into North Carolina and Texas.

The present species is most closely related to *meridionalis* from South America and differs by the much smaller size, the elongate labium and such other differences as are noted in the descriptions.

Slater (1952) summarized the biological information on this species and described the immature stages.

ŒDANCALA MERIDIONALIS Stål, 1874.

Œdancala meridionalis STÅL, Enum. Hemip. 4 (1874) 139.
Œdancala dorsilinea BERG, Hemip. Argent. (1879) 107. (Pt.)
Œdancala dorsalis BERG, Nova Hemip. (1892) 74.
Œdancala meridionalis LETHIERRY and SEVERIN, Gen. Cat. Hemip. 2 (1894) 180.
Œdancala dorsilinea VAN DUZEE, Cat. Hemip. (1917) 174–175. (Pt.)

General coloration reddish brown to deep testaceous, apical corial margin immaculate, lacking dark spots, a prominent whitish lævigate median stripe on pronotum and extending cephalad onto at least basal portion of head; scutellum, two distal tarsal segments, ventral area of fore femora and spotting on all femora, dark brown; scutellum with a pair of oblique

white streaks laterally, but not reaching the lateral margin; rather thickly and evenly punctured.

Head long and slender, tapering strongly to apex and appearing somewhat nasuto-produced, length of head greater than width across eyes, only slightly declivent, much less so than most members of the genus, length head, 1.25 mm (1.20 to 1.36); width head across eyes, 1.14 mm (1.08 to 1.20); interocular space 0.70 mm (0.64 to 0.74); pronotum very broad at base, strongly tapering cephalad, lateral margins evenly rounding, transverse impression absent or very obsoletely indicated, calli indistinct, dorsal surface comparatively flattened, length pronotum, male, 1.70 mm (1.56 to 1.80); female, 1.74 mm (1.60 to 1.84); width pronotum at base, male, 2.09 mm (1.92 to 2.20); female, 2.18 mm (2.00 to 2.32); scutellum with a weak median carina and shallow basal depression, length scutellum, male, 1.07 mm (0.96 to 1.20); female, 1.14 mm (1.08 to 1.16); hemelytra, with lateral margins nearly straight, only slightly expanded near apex of scutellum, distance apex clavus-apex corium, 1.40 mm (1.28 to 1.48); distance apex corium to apex membrane, 1.65 mm (1.48 to 1.80); membrane reaching or, sometimes slightly surpassing apex of abdomen; labium just attaining anterior margin of mesosternum, second segment slightly surpassing anterior margin of prosternum; fore femora very strongly incrassate, armed below with four major spines, length fore femora, males, 2.24 mm (2.00 to 2.40); females, 2.09 mm (1.80 to 2.24); antennæ thick and incrassate, the basal segment conspicuously bent laterad from base of apical dilation, second segment dilated at apex, segments three and four fusiform, length I, males, 1.29 mm (1.16 to 1.36); females, 1.14 mm (1.04 to 1.32); II, males, 0.79 mm (0.72 to 0.86); females, 0.71 mm (0.64 to 0.76); III, males, 0.82 mm (0.76 to 0.90); females, 0.79 mm (0.74 to 0.88); IV, males, 0.87 mm (0.84 to 0.92); females, 0.85 mm (0.80 to 0.88). Total length, males, 7.59 mm (7.24 to 7.96); females, 7.75 mm (7.32 to 8.04).

Deposition of type.—Stockholm Museum.

Material examined.—Holotype male, St. Catharina, Brazil, 61 males, 69 females. BRAZIL: Sao Paulo Province, Porto Ferreira, Piras Ununga; Minas Gerais Province, C. R. Claro. PARAGUAY: Asuncion; Horqueta, 45 miles east Paraguay River; Caaguazo District, Estancia Primera. (At light), Villarica. BOLIVIA: Province del Sara; Cuatro Ojos. ARGENTINA: Buenos Aires Province, Tigre, San Fernando, Delta; Entre Rios Prov-

ince, Concordia, Para de los Libres; Santa Fe Province, Villa Ana, Villa Guillermine; Chaco Province, Colonia Benitez; Corrientes Province, San Roque, Manantiales; Tucuman Province, Siambon Tafi; Formosa Province, Pirani. Iguazu Mis. R. A.; Misiones. Specimens in Stockholm Museum, Carnegie Museum, Vienna Museum, Lillo Foundation, Hungarian National Museum, Kormilev, R.F. Hussey, Chicago Natural History Museum, British Museum, So. Australian Museum, J. C. Lutz, J. C. Carvalho, C. J. Drake, United States National Museum, and author's collections.

This large striking species is apparently fairly common in Argentina and Brazil. *Meridionalis* has gonostyli of the *dorsalis* type and is related to that species *cubana* and *crassimana* not only by the similar gonostyli, but also by the possession of thick, heavy incrassate antennal segments. Little sexual dimorphism is present in this species.

Berg (1879, 1892) is undoubtedly incorrect in synonymizing this species first with *crassimana* and later with *dorsalis*.

ŒDANCALA CRASSIMANA (Fabricius), 1803.

Lygæus crassimanus FABRICIUS, Syst. Rhyng. (1803) 233.
Œdancala dorsilinea AMYOT and SERVILLE, Hemip. Hist. Nat. Ins. (1843) 258.
Pachymerus crassimanus HERRICH-SCHAEFFER, Wanz. Ins. Verz. (1853)147.
Œdancala crassimana STÅL, Hemip. Fabr. 2 (1869) 122.
Œdancala crassimana Stål. Enum. Hemip. 4 (1874) 139. (Part).
Œdancala crassimana UHLER, U.S. Geol. Geog. Surv. Terr. Bull. 1 (1876) 307.
Œdancala cubana UHLER, U.S. Geol. Geog. Surv. Terr. Bull. 1 (1876) 307.
Œdancala crassimana LETHIERRY and SEVERIN, Gen. Cat. Hemip. 2 (1894) 180.
Œdancala dorsilinea LETHIERRY and SEVERIN, Gen. Cat. Hemip. 2 (1894) 180. (Part).
Œdancala dorsilinea VAN DUZEE, Buff. Soc. Nat. Sci. Bull. 9 (1909) 170.
Œdancala crassimana, BANKS, Nearct. Hemip. Heter. Cat. (1910) 59.
Œdancala cubana BANKS, Nearct. Hemip. Heter. Cat. (1910) 59.
Œdancala dorsalis BANKS, Nearct. Hemip. Heter. Cat. (1910) 60. (Pt.).
Œdancala dorsilinea BARBER, Am. Mus. Nat. Hist. Bull. 33 (1914) 511.
Œdancala dorsilinea VAN DUZEE, Hemip. Cat. (1917) 174–175.
Œdancala crassimana VAN DUZEE, Hemip. Cat. (1917) 175.
Œdancala crassimana HEIDEMANN and OSBORN, Carn. Mus. Ann. 11 (1917) 353.

Œdancala dorsilinea BLATCHLEY, Heteropt. E. N. Am. (1926) 382.
Œdancala dorsilinea BRIMLEY, N. Car. Dept. Agr. Div. Ent. (1938) 68.
Œdancala dorsilinea WRAY and BRIMLEY, Ent. Soc. Amer. Ann. 36 (1943) 129.
Œdancala dorsilinea TORRE BUENO, Ent. Amer. 26 (1946) 53.
Œdancala crassimana TORRE BUENO, Ent. Amer. 26 (1946) 54.
Œdancala crassimana BARBER, Soc. Cubana Hist. Nat. Mem. 19 (1947) 73.
Œdancala dorsilinea BARBER, Soc. Cubana Hist. Nat. Mem. 19 (1947) 73.
Œdancala crassimana BARBER, Ent. Soc. Wash. Proc. 51 (1949) 276.
Œdancala crassimana SLATER, Ia. Acad. Sci. Proc. 58 (1952) 557–559.

Testaceous to light ochraceous, mesal scutellar stripe, claval commissure, mesal area of thoracic sterna, apical tarsal segments, prominent spots on ventral half of fore femora and a spot midway between inner angle and apex of corial margin, dark brown to black; pronotum with a weak lævigate median stripe.

Head elongate, tapering to apex and appearing somewhat nasuto-produced, length head, 1.06 mm (0.96 to 1.20); width across eyes, 1.05 mm (1.00 to 1.14); interocular space, 0.63 mm (0.60 to 0.68); pronotum broad, tapering strongly cephalad, disc coarsely punctured, lateral margins nearly straight, transverse impression absent or obsolete, length pronotum, 1.37 mm (1.24 to 1.68); width pronotum, 1.83 mm (1.68 to 2.12); scutellum with a moderately conspicuous median carina and shallow basal depression; length scutellum, 0.94 mm (0.88 to 1.04); hemelytra with lateral margin conspicuously expanded near apex of scutellum, as wide as or wider than basal width of pronotum in this region, abdominal connexivum exposed caudally, membrane reaching or slightly exceeding apex of abdomen, distance apex clavus-apex corium, 1.13 mm (1.04 to 1.32), distance apex corium-apex membrane, 1.39 mm (1.20 to 1.60); labium reaching to just before center of mesosternum, second segment exceeding anterior margin of prosternum by not more than one-third its length, basal segment not extending caudally beyond region of antennal base; fore femora strongly incrassate, armed below with four black-tipped major spines, length fore femora males, 2.04 mm (1.68 to 2.48); females, 1.68 mm (1.52 to 1.88); basal tarsal segment longer than segments two and three combined; antennæ, segments thick, incrassated, usually less so in females, length I, males, 1.44 mm

(1.14 to 1.86); females, 1.19 mm (1.12 to 1.24); II, males, 0.72 mm (0.58 to 0.88); females, 0.66 mm (0.62 to 0.72); III, males, 0.71 mm (0.60 to 0.84); females, 0.69 mm (0.64 to 0.76); IV, males, 0.80 mm (0.68 to 0.88); females, 0.74 mm (0.68 to 0.76). Total length, 6.23 mm (5.68 to 7.28).

Deposition of type.—Uncertain: possibly in Vienna Museum.

Through the courtesy of the Vienna Museum I have had the opportunity of examining a specimen labeled type of *dorsilinea* Amyot and Serville. This specimen is a typical although badly discolored *dorsalis,* however, it does not agree well with the original description or the colored figure. This latter is certainly *crassimana.* I am inclined to doubt if the Vienna specimen actually does represent the specimen that Amyot and Serville had before them and for the time being accept the evidence of the description and figure and the opinion of nearly all subsequent students of the species.

Material examined.—53 males; 46 females: Alabama, Florida, Georgia, Leeward Islands, British West Indies; Louisiana, Maryland, New York (Long Island), North Carolina, Texas. CUBA: Baragua.

Specimens in British Museum, J. C. Lutz, United States National Museum, Museum of Comparative Zoology (Harvard), C. J. Drake, H. M. Harris, U. Kansas, Vienna Museum, Stockholm Museum, and author's collections.

Distribution.—The general distribution is southern in the United States and it may be considered as essentially a member of the Austroriparian fauna. It is surprising to see a specimen from Long Island, New York in the Torre-Bueno collection at Kansas University. *Crassimana* extends southward into the West Indies and probably into Central South America, although some records for this species possibly belong to other members of the genus, particularly *notata* and *bimaculata.*

This is the most variable and perplexing of all the species of *Œdancala.* The size, range, and variation of structural parts is of considerable magnitude as can be seen by referring it to measurement extremes listed in the preceding description. However, I have found no really reliable characters for separation of the specimens before me into more than one species. Furthermore, in a series from western Louisiana collected at the same time and place variation is present that is nearly as great as that of the entire study series. I suspect that a subspeciation study might yield interesting results in this species.

Two very large specimens, one from Hatero, Florida (Van Duzee, in Torre Bueno, K.U. Collection) the other from Boll. Texas, 1875 (Vienna Museum), appear to represent the large extreme that Uhler (1876) mistook for *cubana*.

Crassimana belongs to the *dorsalis* group through the type of male gonostyli, the incrassate antennæ and elongate head. It is perhaps most closely related to *cubana*, although in general habitus resembles *dorsalis* and pale specimens of *notata* most closely. Two specimens from the Isle of Pines that appear to belong here lack the color spot along the apical margin of the corium which is very constant in this variable species otherwise, as well as in other members of the genus.

Wray and Brimley (1943) reported this species from the pitcher plant, *Sarracenia flava*.

ŒDANCALA CUBANA Stål, 1874.

Œdancala cubana Stål, Enum. Hemip. 4 (1874) 139.
Œdancala cubana Gundlach, Soc. Española Hist. Nat. Ann. 22 (1893) 283.
Œdancala cubana Lethierry and Severin, Gen. Cat. Hemip. 2 (1894) 180.
Œdancala cubana Heidemann and Osborn, Carn. Mus. Ann. 11 (1917) 353.
Œdancala cubana Wolcott, Journ. Agr. U. Puerto Rico 20 (1936) 167.
Œdancala cubana Torre Bueno, Ent. Amer. 26 (1946) 53.
Œdancala cubana Barber, Soc. Cubana Hist. Nat. Mem. 19 (1947) 72–73.

General coloration testaceous; broken line mesad about calli, base of head, a broad mesal stripe and narrow basal lateral stripes on scutellum, narrow margin along claval commissure, infuscated area of base of membrane between inner angles of apical margin of corium, gular area of head, meso-and metasternum mesally, third and fourth labial segments, apical tarsal segment and antennæ, dark brown to black; abdominal venter of male castaneous, of female testaceous with a longitudinal black line midway between meson and margin; fore femora heavily spotted with dark brown, mid and hind femora more or less obsoletely spotted on apical two-thirds; apical margin of corium immaculate, lacking brown spots.

Body very elongate, robust, head, pronotum and abdominal tergum strongly punctured, corium obsoletely so, nearly glabrous above; sparsely clothed below with decumbent, sericeous pile.

Head, length males, 1.19 mm (1.16 to 1.22); females, 1.08 mm (1.02 to 1.20); width across eyes, 1.11 mm (1.04 to 1.16); interocular space, 0.67 mm (0.62 to 0.70), jugal carinæ moderately produced, head only slightly declivent; pronotum elongate, usually nearly as long as basal width, transverse constriction very prominent, anterior lobe longer than posterior, area of calli nearly smooth, somewhat obsoletely and obscurely punctured compared with remainder of disc, lateral margins sinuate, lightly calloused anteriorly, a mesal lævigate line on anterior lobe, sometimes continued onto head, but always obsolete or absent on posterior lobe, length pronotum, male, 1.73 mm (1.52 to 1.92); female, 1.56 mm (1.40 to 1.72); width pronotum, 1.79 mm (1.58 to 1.92); scutellum with a prominent median carina, length scutellum, 1.10 mm (1.04 to 1.20); hemelytra with lateral margins narrow, slightly expanded caudad of apex of scutellum, covering the connexiva in both sexes, membrane slightly surpassing apex of abdomen; distance apex clavus-apex corium, 1.42 mm (1.40 to 1.48); distance apex corium-apex membrane, 1.80 mm (1.68 to 1.84); apical margin of corium non-calloused immaculate; labium extending between fore coxæ, second segment slightly exceeding anterior margin of thorax; fore femora very strongly incrassate, armed below with four or five major spines and a few minor ones, length male, 2.66 mm (2.24 to 2.80); female, 1.93 mm (1.68 to 2.06), inner apex of foretibiæ with a prominent spine; antennæ strongly incrassated and very elongate, length I, males, 2.96 mm (2.32 to 3.20); females, 1.72 mm (1.56 to 1.84); II, males, 1.13 mm (0.90 to 1.28); females, 0.75 mm (0.68 to 0.84); III, males, 0.93 mm (0.80 to 1.04); females, 0.72 mm (0.64 to 0.80); IV, 0.83 mm (0.80 to 0.88). Total length, 7.58 mm (7.12 to 8.04).

Deposition of type.—Stockholm Museum.

Material examined.—Holotype male, 41 males, 31 females. CUBA: Santiago, Soledad (Province Santa Clara), Baragua, Havana, Upper Yara Valley, San Blas, Cienga de Zapota, Buenos Aires (Trinidad Mts.), Baracoa, Gunatanamo. ISLE OF PINES: Columbia, McKinley. Specimens in United States National Museum, Vienna Museum, Stockholm Museum, Deutsches Entomologische Institute, Museum of Comparative Zoology (Harvard), and author's collections.

Distribution.—This large strikingly distinct species is confined in distribution to Cuba and the Isle of Pines.

This species shows great size variation and considerable variation in the length of the antennal segments even in the restricted number of specimens that I have been able to examine. The species is strongly sexually dimorphic much more so than in any other member of the genus, and approaching the condition found in many species of *Pachygrontha*. The males have much longer antennæ, larger femora and a pronotum that is nearly as long as wide, whereas all of the females examined have the width of the pronotum across the base appreciably greater than the median length. In some male specimens the basal antennal segment is not so long as the three distal segments together as stated by Barber (1947). Two male specimens in the United States National Museum from Baracoa, Cuba are appreciably smaller than the remainder of the material examined (6.32 mm and 6.40 mm) and with the pronotum wider than long (1.30 mm to 1.46 mm), but apparently are only small specimens of *cubana*. *Cubana* has genital gonostyli of the *dorsalis* type and appears in many respects to be most closely related to *crassimana*, although the immaculate condition of the corial margin would ally the species with *dorsalis* and *meridionalis*. In many respects *cubana* approaches the genus *Pachygrontha*, but the incrassate antennal segments and the large eye (see generic key) will serve to adequately establish its position as an *Œdancala*.

Nothing is known of the biology of this species other than collecting notes by Harold Morrison of specimens taken from sugar cane at Santiago, Cuba. (United States National Museum specimens).

ŒDANCALA NANA sp. nov.

General coloration reddish-brown; apex of clypeus, a prominent median line on pronotum, extending obscurely onto head, lateral areas of scutellum, hemelytra, legs, scent gland orifices and basal labial segments, testaceous; apical margin of corium with a prominent diffused brown spot midway between claval angle and apex, eyes and apex of apical tarsal segments, dark brown.

Head elongate, tapering conspicuously to apex, declivent, length head, 0.89 mm (0.84 to 0.96); width across eyes, 0.88 mm (0.84 to 0.92); interocular space, 0.55 mm (0.52 to 0.56); pronotum with a shallow, but conspicuous transverse constriction, lateral margins weakly calloused, punctures fairly evenly distributed over entire surface, testaceous, lævigate median stripe very conspicuous on anterior lobe, obsolete on posterior

lobe, length pronotum, 1.08 mm (1.00 to 1.12), width pronotum at base, 1.37 mm (1.32 to 1.48); scutellum with a weak median carina, length, 0.80 mm (0.76 to 0.84); hemelytra slender, tapering rather evenly from base to apex, only slightly expanded in area of apex of scutellum, entirely covering abdominal connexiva, length apex clavus-apex corium, 0.91 mm (0.84 to 0.96); length apex corium to apex membrane, 1.09 mm (1.00 to 1.16); membrane just exceeding apex of abdomen; labium extending caudad onto mesosternum, second segment just reaching anterior margin of prosternum; fore femora lightly incrassated, armed below on apical two-thirds with three major black-tipped spines, length fore femora, 1.33 mm (1.28 to 1.40); antennæ slender, not at all incrassated, third and fourth segments slightly fusiform. Lenth I, 0.98 mm (0.92 to 1.04); II, 0.55 mm (0.52 to 0.58); III, 0.70 mm (0.64 to 0.76); IV, 0.67 mm (0.62 to 0.72). Total length, males, 4.69 mm (4.60 to 4.76); females, 4.89 mm (4.84 to 5.00).

Holotype.—Male, San Luis, Paraguay. (Reimoser). (Vienna Museum).

Paratypes.—2 males, 4 females, San Luis, Centurion, Paraguay. (Reimoser), Vienna Museum, United States National Museum, and author's collections.

This small species belongs to the *bimaculata* group in the structure of the male gonostyli, but the gonostyli are distinctive for the species (Plate 3, fig. 10). *Nana* also possesses the slender non-incrassated antennal characteristics of the *bimaculata* and *notata* groups. It may readily be recognized from all other members of the genus, by the relatively very short second antennal segment. In general habitus *nana* bears a resemblance to *Pachygrontha compacta,* but may be recognized by the generic characters used to distinguish members of these two close related genera.

ŒDANCALA MEXICANA sp. nov.

General coloration testaceous; punctures, area about base of head above, and in females a broad longitudinal vitta on venter of abdomen, black, median and apical spots present along apical margin of corium, distal portion of apical tarsal segment, mesal area of sternum, apex of tibiæ and conspicuous spots on fore femora and distal one-third of mid and hind femora, dark brown; antennæ testaceous, apex of second segment, distal three-fourths of third segment and fourth segment except extreme base, reddish-brown.

Head broad, short and strongly declivent, length head, 0.84 to 0.94 mm; width across eyes, 0.94 to 0.98 mm; interocular space, 0.52 to 0.56 mm; pronotum broad and short, transverse impression obsolete, anterior lobe much shorter than posterior lobe, lateral margins non-calloused and nearly straight, length pronotum, 1.12 to 1.24 mm; width pronotum at base, 1.60 to 1.72 mm; scutellum lacking a conspicuously darkened median area, the carina extremely feebly represented, length scutellum, 0.84 to 0.90 mm; hemelytra only slightly expanded caudad of apex of scutellum, membrane exceeding apex of abdomen; labium short, barely reaching mesosternum, second segment attaining anterior margin of prosternum; fore femora short and strongly incrassated, armed below with four major spines, length fore femora, 1.24 mm; antennæ slender, non-incrassated, length I, 0.68 to 0.72 mm; II, 0.56 mm; III, 0.52 to 0.58 mm; IV, 0.56 mm. Total length, male, 4.84 mm; female, 5.16 mm.

Holotype.—Male, Tapir, Mexico, in United States National Museum, No. 61935.

Paratype.—Female, San Francisco, California (intercepted on orchids from Mexico), author's collection.

This species has male gonostyli of the *dorsalis* type, but has very slender antennæ with the first segment extremely short. In general habitus the species is rather similar to *bimaculata* Distant.

ŒDANCALA BIMACULATA (Distant), 1893.

Pachygrontha bimaculata DISTANT, Centr. Amer. Heter. Biol. 1 (1893) 393.

Pachygrontha bimaculata LETHIERRY and SEVERIN, Gen. Cat. Hemip. 2 (1894) 180.

Pachygrontha bimaculata VAN DUZEE, Buff. Soc. Nat. Sci. Bull. 8 (1907) 77.

Pachygrontha bimaculata BANKS, Nearct. Hemip. Heter. Cat. (1910) 60.

Pachygrontha bimaculata VAN DUZEE, Hemip. Cat. (1917) 175.

Pachygrontha bimaculata BARBER, N. Y. Acad. Sci. (3) 14 (1939) 347.

Pachygrontha bimaculata TORRE BUENO, Ent. Amer. 26 (1946) 55.

Œdancala bimaculata BARBER, Soc. Cubana Hist, Nat. Mem. 19 (1947) 73.

Pachygrontha bimaculata WOLCOTT, Agr. U. Puerto Rico Journ. 32 (1950) 204.

General coloration nearly uniformly testaceous over entire body, sometimes slightly darker on head; apical margin of corium with a brown spot midway between apex of corium and mesal angle, apex of corium immaculate; scutellum mesally

usually lacking a dark longitudinal stripe; meso-and metasternum sometimes darkened, abdominal venter of male castaneous, female with an inconspicuous longitudinal stripe midway between meson and margin; punctures dark brown to black, often darker near meson of scutellum.

Head broad, only slightly narrowing to apex and giving species a comparatively blunt appearance, length head, 0.89 mm (0.80 to 0.92); width of head across eyes, 0.96 mm (0.92 to 1.00); interocular space, 0.59 mm (0.56 to 0.62); pronotum subquadrate, lateral margins nearly straight, transverse impression absent or very obsoletely visible, dorsal surface relatively flattened, length pronotum, 1.13 mm (1.06 to 1.24); width pronotum at base, 1.49 mm (1.40 to 1.64); scutellum with median carina absent, or obsolete, basal depression shallow, length scutellum, 0.82 mm (0.76 to 0.88); hemelytra with lateral margins nearly straight only very slightly expanded near apex of scutellum, membrane exceeding apex of abdomen, distance apex clavus-apex corium, 1.14 mm (1.08 to 1.20); distance apex corium to apex membrane, 1.25 mm (1.08 to 1.36); labium short, just attaining anterior margin of mesosternum, second segment not reaching anterior margin of prosternum; fore femora moderately incrassate armed below with four major spines, strongly spotted with brown on apical one-half, length fore femora, 1.47 mm (1.40 to 1.56); antennæ slender, elongate, three distal segments subequal, length I, 1.22 mm (1.12 to 1.40); II, 0.70 mm (0.64 to 0.80); III, 0.72 mm (0.64 to 0.80); IV, 0.68 mm (0.64 to 0.74). Total length, 5.56 mm (5.40 to 6.04).

Deposition of type.—British Museum.

Material examined.—16 males, 18 females: PANAMA; 1 male, 1 female, Bugaba (topotypic and collected by Champion, these specimens possibly formed part of the original series and have been compared with the type through the kindness of Mr. Izzard). PARAGUAY: Toldo Cue, San Luis, Caaguazu Dist. Estancia Primera (at light). DOMINICAN REPUBLIC: San Christabal. BRISTISH HONDURAS: San Antonio, Punta Gorda, Rio Grande. TRINIDAD: Aripo Savana. BRAZIL: Porto Ferreiro, Sao Paulo. PORTO RICO: Mayaguez. GRENADA, West INDIES: Mount Gay Est, (Leeward Side). MEXICO: Loma Bonita Oaxaica, Chipancingo (intercepted Laredo, Texas, on orchid plants), Guerrero (intercepted Laredo, Texas, on orchid plants), Tamazunchale (intercepted Laredo, Texas, on orchid plants), Cordova.

Specimens in R. F. Hussey, J. C. Lutz, United States National Museum, Hungarian National Museum, C. J. Drake, J. C. Carvalho, Stockholm Museum, Vienna Museum, British Museum, Carnegie Museum, and author's collections.

Distribution.—This is apparently a very widely distributed species occurring over much of South America, Central America, the West Indies, and northward into Mexico. The species was described by Distant from Panama and previously has been reported from Porto Rico, Cuba, Dominican Republic, Grenada (Barber, 1939), Island Pines (Barber, 1947), and Texas (Banks, 1910), this latter record was listed by Van Duzee (1917) as questionable, however in view of the Mexican distribution and the several specimens intercepted at quarantine at Laredo it seems probable that the Banks record is accurate.

The gonostyli of *bimaculata* set the species aside in a distinct section of the genus together with *longirostris, nana,* and *husseyi* but in habitus and most external characters it is very closely related to *notata* and it is very difficult to establish good external characters that will always serve to separate the two species as may be ascertained by the somewhat unsatisfactory couplet used in the specific key. From *nana,* in addition to the characters given in the key, the present species may be distinguished by its larger size, the less markedly tapering pronotum, the broader head and absence of the reddish caste often present in specimens of *nana.* The gonostyli, while of the same type, present adequate specific differences for critical separation (see Plate 3, figs, 6, 7). Barber (1947) is undoubtedly correct in assigning this species to the genus *Œdancala.*

ŒDANCALA HUSSEYI sp. nov.

General coloration rufo-testaceous; pronotum obscurely marked with three longitudinal brownish vittæ, secutellum with prominent castaneous stripe and pair of lateral yellow maculæ; brown spot present midway along apical corial margin, apex unspotted, fore femora profusely spotted with brownish.

Pronotal punctures large and rather widely, spaced on posterior lobe.

Head elongate, strongly tapering to apex and moderately declivent, giving attenuated appearance to head, length, 1.10 mm (1.05 to 1.15); width across eyes, 1.15 mm (1.10 to 1.20); interocular space, 0.73 mm (0.70 to 0.75); pronotum, very

elongate, strongly tapering anteriorly, lateral margins nearly straight, dorsal surface prominently convex, length, 1.41 mm (1.35 to 1.50); width, 1.67 mm (1.60 to 1.75); scutellum with weak median carina, basal depression moderately developed, length, 0.95 mm (0.90 to 1.00); hemelytra, with lateral margins sub-sinuate, conspicuously expanded near apex of scutellum, distance apex clavus-apex corium, 1.12 mm (1.05 to 1.20); distance apex corium-apex abdomen, 1.23 mm (1.13 to 1.30); labium short, just attaining apex of mesosternum, second segment not attaining anterior margin of prosternum; fore femora strongly incrassate, armed below with four major black-tipped spines, length, 1.87 mm (1.70 to 1.95); antennæ slender, elongate, length I, 1.35 mm, II, 0.82 mm (0.80 to 0.85); III, 0.73 mm (0.70 to 0.75); IV, 0.73 mm (0.70 to 0.75). Total length, 5.97 mm (5.70 to 6.25).

Holotype.—Male, Caaguazu District, Estancia Primera, Paraguay. December 4, 1931. (R. F. Hussey). In R. F. Hussey collection.

Paratypes.—1 male, 1?, same data as holotype. In R. F. Hussey and author's collection.

This new species is rather closely related to *bimaculata*, differing most obviously in the very elongate pronotum, tapering head, slightly pedunculate eyes and longer first antennal segment. The length of the pronotum relative to other structural areas is so marked that the species can readily be separated from *bimaculata* on this character alone without the necessity of even utilizing an ocular micrometer. The type series was taken from "marsh grasses."

It is a pleasure to dedicate this new species to the collector Dr. R. F. Hussey of the University of Florida for his many fine contributions to our knowledge of the Hemiptera of the Western Hemisphere.

ŒDANCALA LONGIROSTRIS sp. nov.

General coloration pale yellowish, shining lateral margin of antenniferous tubercles, mesal area of meso- and metasterna, an obsolete vitta on abdominal venter midway between meson and margin, gular area of head and apical portion of distal tarsal segment, terminal labial segment, and spots on fore and mid femora, dark brown; abdominal venter of male castaneous and antennal segments sometimes suffused with brownish; scutellum lacking a dark median stripe; apical margin of corium immaculate; glabrous above, weakly clothed below with appressed

sericeous pubescence, coarsely punctate on pronotum with area of calli bearing only a few scattered punctures.

Robust, head very elongate and tapering, moderately declivent, clypeus extending cephalad for at least basal one-third of first antennal segment, ocelli large and prominent, length head male, 1.15 mm (1.14 to 1.16); female, 1.26 mm (1.20 to 1.28), eyes large and prominent; width of head across eyes, males, 1.04 mm (1.00 to 1.06); females, 1.10 mm (1.08 to 1.12); interocular space, 0.56 mm (0.54 to 0.60); pronotum very broad with greatest width of insect across base of pronotum from whence the insect tapers markedly both caudad and cephalad, transverse impression absent, lateral margins nearly straight, the surface sloping downward from base to apex, often forming a declivent curve with the surface of the head, length of pronotum, male, 1.51 mm (1.48 to 1.52); female, 1.57 mm (1.48 to 1.60); width pronotum, male, 1.89 mm (1.84 to 1.94); female, 2.09 mm (2.00 to 2.18); scutellum with a very obsolescent median carina and a weak basal depression, length male, 0.92 mm (0.88 to 0.94), female, 1.04 mm (1.00 to to 1.12); hemelytra narrowing caudad, only slightly expanded in region of apex of scutellum, but completely covering abdominal connexivum, membrane reaching apex of abdomen, distance apex clavus-apex corium, male, 1.15 mm (1.12 to 1.20); female, 1.25 mm (1.20 to 1.32); distance apex corium-apex membrane, male, 1.46 mm (1.36 to 1.56); female, 1.57 mm (1.48 to 1.60); labium extremely long, reaching caudad to apex of mesocoxæ, second segment exceeding anterior margin of prosternum by two-thirds its length, almost attaining base of front coxæ; fore femora prominently incrassate, armed below with four short, stubby major spines, length fore femora, male, 1.81 mm (1.76 to 1.84); female, 1.90 mm (1.80 to 2.04); antennæ slender, not strongly incrassated, length, I, 1.25 mm (1.20 to 1.32); II, 0.83 mm (0.80 to 0.86); III, 0.91 mm (0.84 to 0.96); IV, 0.80 mm (0.76 to 0.82). Total length, males, 6.38 mm 6.28 to 6.44); females, 6.88 mm (6.68 to 7.00).

Holotype.—Male, Chapada, Brazil, Acc. No. 2966, June. In Carnegie Museum.

Paratypes.—20 males, 9 females, same data as holotype, Stockholm Museum, Carnegie Museum, United States National Museum, H. M. Harris, and author's collections; 1 female, Chavantina, Mato Grosso, Brazil, June, 1947, J. C. M. Carvalho, (J. C. M. Carvalho collection).

This large and strikingly distinct species resembles *meridionalis* most closely in general habitus, and has the long labium of *dorsalis*. The male gonostyli are of the *bimaculata* type and the slender antennal segments also indicate its position in the *bimaculata* group of the genus.. Females have a very prominent ovipositor that extends four-fifths the entire length of the abdomen, in striking contrast to most members of the genus.

The type series is remarkably constant, some specimens show a tendency toward fuscous markings, particularly on the head, pronotum and along the claval commissure.

ŒDANCALA KORMILEVI sp. nov.

General coloration testaceous; median stripe and base of scutellum, claval commissure, mesal area of meso- and metasternum, spots on femora and a pair of apical and median spots along apical margin of corium, dark brown; pronotal punctures brown, usually only moderately contrasting with ground color and never strongly black.

Head short, clypeus not elongately produced, moderately declivent, length head, 0.80 mm (0.76 to 0.86); width across eyes, 0.86 mm (0.82 to 0.88); interocular space, 0.48 mm (0.46 to 0.50); pronotum sub-quadrate, strongly tapering to cephalic margin, lateral margin sinuate, transverse impression broad and shallow, area of calli swollen and prominent, length pronotum, 1.09 mm (1.04 to 1.12); width pronotum, male, 1.37 mm (1.30 to 1.40); female, 1.43 mm (1.40 to 1.48); scutellum with median carina obsolete, length, 0.77 mm (0.72 to 0.80); hemelytra moderately expanded before apex of scutellum, membrane slightly exceeding apex of abdomen, distance apex clavus-apex corium 0.93 mm (0.88 to 1.00); distance apex corium-apex membrane, 1.07 mm (0.96 to 1.16); labium short, not attaining anterior margin of mesosternum, second segment remote from anterior margin of prosternum; fore femora moderately incrassate, armed below with four major spines, length, 1.14 mm (1.10 to 1.20); antennæ with segments slender, first segment short, length I, 0.69 mm (0.66 to 0.76); II, 0.51 mm (0.48 to 0.56); III, 0.54 mm (0.52 to 0.60); IV, 0.54 mm (0.52 to 0.54). Total length, 4.81 mm (4.64 to 4.96). Male gonostyli of the *dorsalis* type.

Holotype.—Male, R. Paraguay near junction with Parana, December, Acc. 2966. In Carnegie Museum.

Paratypes.—9 males, 17 females. BOLIVIA: Province del Sara, Acc. 5068; Sta. Cruz de la Sierra, altitude 450 meters, Cuatro

Ojos. PARAGUAY: Horqueta (57–10, W. 23–24N) Paraguay River, Chaco (Fiebrig), PERU: Satipo. ARGENTINA: Chaco, Dep. Resistencia. FRENCH GUIANA: Guyane Francaise. Specimens in U. Kansas, N. A. Kormilev, Vienna Museum, Hungarian National Museum, Museum of Comparative Zoology (Harvard), Carnegie Museum, C. J. Drake, J. C. Lutz, and author's collections.

This small species is most closely related to *mexicana*, by the slender antennæ and the very short basal segment. The distinct transverse impression across the pronotum and the swollen calli give the species a rather distinctive appearance.

The species is apparently widely distributed, although scarce, in South America.

I take pleasure in dedicating this species to Dr. Nicolas Kormilev for his many contributions to our knowledge of the Neotropical Hemiptera.

ŒDANCALA NOTATA Stål, 1874.

Œdancala notata STÅL, Enum. Hemip. 4 (1874) 139.
Œdancada notata LETHIERRY and SEVERIN, Gen. Cat. Hemip. 2 (1894) 180.
Œdancala notata VAN DUZEE, Amer. Ent. Soc. Trans. 27 (1901) 348.
Œdancala notata TORRE BUENO, Ent. News 25 (1914) 260.

General coloration tectaceous to reddish-brown, apical corial margin with a median spot that is often expanded into a diffuse darkened area covering most of margin, or even entire apical half of corium; head and pronotum with a weak median lævigate line, pronotal disc often heavily suffused with dark reddish-brown; scutellum with a black median vitta; claval commissure, profuse spotting on femora, distal segments of tarsi, female ovipositor and lateral abdominal stripe midway between meson and margin in females, and scattered areas on head, brown; coarsely and evenly punctured, below clothed with sericeous pile, nearly glabrous above except laterally on head, where the pile is conspicuous and sharply delimited mesad.

Head moderately elongate, tapering and declivent, length head, 0.95 mm (0.88 to 1.00); width across eyes, 1.02 mm (0.96 to 1.06); interocular space, 0.59 mm (0.56 to 0.62); pronotum relatively broad and strongly tapering cephalad, transverse constriction absent or obsoletely visible, lateral margins nearly straight and obtusely carinate anteriorly, length pronotum, 1.24 mm (1.16 to 1.32); width pronotum, 1.63 mm (1.54 to 1.72); scutellum with a weak median ridge and shallow basal depression, length, 0.86 mm (0.80 to 0.92); hemelytra with lateral

margins considerably expanded near apex of scutellum, membrane reaching or slightly exceeding apex of abdomen, distance apex clavus—apex corium, 1.13 mm (1.00 to 1.24); distance apex corium-apex membrane 1.27 (1.16 to 1.36); labium short reaching caudad onto anterior portion of mesosternum, second segment only slightly exceeding anterior margin of prosternum; fore femora only moderately swollen, armed below with four major spines, length fore femora, 1.57 mm (1.44 to 1.68); antennæ slender, non-incrassated, length I, 1.31 mm (1.16 to 1.40); II, 0.71 mm (0.64 to 0.76); III, 0.76 mm (0.72 to 0.82); IV, 0.71 mm (0.66 to 0.74)). Total length, 5.75 mm (5.24 to 6.20). Male gonostyli distinctive (Plate 3, fig. 1).

Deposition of type.—Stockholm Museum.

Material examined.—Type female, Bogota, Colombia: 27 males, 30 females: COSTA RICA: Laqunilla, Coyolar, Hiquito. BRAZIL: Vicosa, Sao Paulo; Pira Sununga, Para, Natal, Santarem. BRITISH GUIANA: Bartica, Mallali, Kartabo. PERU: Iquitos. COLOMBIA: Sevilla, Dept. Magdalena. BRITISH HONDURAS: Benque Viejo.

Specimens in Stockholm Museum, British Museum, J. C. Lutz, United States National Museum, Hungarian National Museum, J. C. Carvalho, U. Kansas, Carnegie Museum, U. Michigan Museum of Zoology, Museum of Comparative Zoology (Harvard), and author's collections.

Distribution.—Apparently confined in distribution to the tropical portions of South America and extending northward into the southern portions of Central America.

The type from Bogota resembles the Costa Rican material very closely and measures 5.66 mm not 7 mm as stated by Stål in the original description of the species. Specimens from British Guiana and Brazil show much more extensive diffused coloration on the corium, clavus and pronotum and vary somewhat in a few structural details. The following characters show the greatest variation from the two regions.

Length first antennal segment: Costa Rica, 1.35 mm (1.24 to 1.40); British Guiana, 1.26 mm (1.16 to 1.28). Distance apex clavus-apex corium; Costa Rica, 1.20 mm (1.16 to 1.24); British Guiana, 1.05 (1.00 to 1.12). Distance apex corium-apex membrane: Costa Rica, 1.30 mm (1.24 to 1.36); British Guiana, 1.24 mm (1.16 to 1.28). Length pronotum: Costa Rica, 1.27 mm (1.20 to 1.32); British Guiana, 1.20 mm (1.16 to 1.24). Width pronotum: Costa Rica, 1.68 mm (1.64 to 1.72); British Guiana,

1.58 mm (1.54 to 1.64). Length fore femora: Costa Rica, 1.61 mm (1.56 to 1.68); British Guiana, 1.52 mm (1.44 to 1.60). Perhaps subspecific populations exist in this species, but in the absence of series from more stations and in view of the considerable overlap of most characters, nomenclature status has not been accorded these populations at the present time.

O. notata may be considered to form an independent group within the genus as the male gonostyli are distinctly different. In general habitus pale specimens resemble *bimaculata* (Distant) and *crassimana* (F.)

Genus MAGNINUS Distant, 1901

Magninus Distant, Nat. Hist. Ann. (7) 8 (1901) 474–475.

Clypus extending well forward of jugæ strongly compressed, only very slightly declivent, jugæ carinate; compound eyes small, distance from cephalic margin of eye to base of antennæ much greater than length of an eye; antennæ very long and prominent, first segment greatly exceeding the clypeus, thickened throughout entire length and only moderately more clavate on apical fourth; labium reaching front coxæ, but not attaining the mesosternum, second labial segment not reaching caudad to base of head; pronotum wider at base than median length, anterior margin strongly concave, the posterior margin sinnate, convex medially, the caudo-lateral angles prominent and rounded, posterior pronotal lobe somewhat elevated; scutellum about equilateral, the base depressed, this margined posteriorly by a raised semi-rounded carina running transversely across the disc; corium very long relative to the length of abdomen and membrane, distance from apex of clavus to apex of corium subequal to distance from apex of corium to apex of membrane, lateral margins of abdomen strongly ampliated; fore femora incrassate, armed below with strong spines; entire body strongly punctate.

Type species: *Magninus typicus* Distant, 1901. Monobasic.

This striking genus is endemic to Australia. The genus is undoubtedly closely related to *Pachygrontha* and *Œdancala,* differing from them primarily by the strongly compressed clypeus, the thick, slightly clavate basal antennal segment and relatively elongate corium.

Magninus may be considered as a rather primitive form and is perhaps rather similar to the basic stock from which the more specialized *Pachygrontha* and *Œdancala* have arisen.

MAGNINUS TIPICUS Distant, 1901. **Plate 1, fig. 2.**

Magninus typicus DISTANT, Nat. Hist. Ann. (7) 8 (1901) 475.

Dark testaceous; blotch behind eye, punctures along lateral area of pronotum, base of scutellum, a spot near middle of apical margin of corium, black; a broad lævigate whitish line entire along meson of pronotum and scutellum and extending obsoletely along mesal line of head; ventral surface of femora and fore coxæ dark brown; apical one-third of first antennal segment, apical one-half of segments three and four and venter of abdomen reddish-yellow suffusing to testaceous proximally; basal antennal segment and femora covered with prominent brown spots.

Entire body with exception of abdominal venter strongly and thickly punctate; above nearly glabrous, below clothed with appressed pile.

Head, length, 1.40 mm; width of head across eyes, 1.20 mm; interocular space, 0.80 mm; jugal carinæ moderately sinuate, converging from base to apex, bucculæ small, covering only base of first labial segment; pronotum, length, 1.80 mm; width pronotum, 2.00 mm; lateral margins moderately lævigate; scutellum, length, 1.0 mm; clavus with four to five irregular rows of punctures and claval suture very long, corium broad, the lateral margin convex narrowing to apex, length of corium, 3.28 mm; distance from apex clavus to apex corium, 1.32 mm; distance from apex corium to apex membrane, 1.40 mm; membrane reaching apex of abdomen, the veins nearly regular, slightly anastomosing; fore femora armed below with four major spines between which are small secondary spines, basal tarsal segment longer than either segments two or three, antennæ, length I, 4.20 mm; II, 2.48 mm; III, 1.56 mm; IV, 1.00 mm. Total length, 7.9 mm.

Deposition of type.—British Museum.

Distribution.—Endemic to Australia. I have seen a single male specimen of this species from Warren River, Western Australia (W. D. Dodd) in the South Australian Museum's collection.

Genus UTTARIS Stål, 1874

Uttaris Stål, Enum. Hemip. 4 (1874) 138.

Uttaris LETHIERRY and SEVERIN, Gen. Cat. Hemip. 2 (1894) 180.

Head large and broad, eyes extending laterad of anterior margin of pronotum, declivent in front of eyes, jugæ non-carinate,

much shorter than clypeus, ocelli placed nearer compond eyes than to each other, first antennal segment exceeding clypeus by at least one-half its total length, slenderly clavate from base to apex, antennal segments three and four fusiform; pronotum with side margins evenly rounded, narrowed markedly at conspicuous transverse depression, obsolete median carina present near center of anterior pronotal lobe and on scutellum; membrane reaching apex of abdomen, apical abdominal segment of male evenly rounded; labium reaching anterior area of mesosternum, second segment reaching base of head; fore femora strongly incrassate and spined below; body densely punctured and clothed sparsely with inconspicuous sericeous pile.

Type species: *Ischnodemus pallidipennis* Stål, 1859. Monobasic.

Distribution.—South Africa.

This is a monotypic genus that has no really close relatives among the members of the subfamily. The male gonostyli (Plate 4, fig. 14) are rather similar to those found in some species of *Pachygrontha.* The elongate first antennal segment establishes the genus in the tribe Pachygronthini. *Uttaris* differs from other members of the tribe in lacking carinate jugal carinæ, possessing rounded pronotal margins, a fusiform third antennal segment and differs strikingly in general habitus.

UTTARIS PALLIDIPENNIS (Stål), 1859. **Plate 1, fig. 3.**

Ischnodemus pallidipennis STÅL, Freg. Eug. Resa. Ins. Hemip. (1859) 248.
Œdancala pallidipennis STÅL, Hemip. Afr. 2 (1865) 147.
Uttaris pallidipennis STÅL, Enum. Hemip. 4 (1874) 138.
Uttaris pallidipennis LETHIERRY and SEVERIN, Gen. Cat. Hemip. 2 (1894) 180.

General coloration black, shining; posterior lobe of pronotum, hemelytra with exception of brownish spot at apex of corium, apices of femora, tibiæ, tarsi, two proximal antennal segments, bucculæ, labium and coxæ testaceous. Body strongly punctured.

Head large, eyes prominent, width across eyes, males, 0.79 mm (0.76 to 0.80) ; females, 0.90 mm (0.86 to 0.94) ; interocular space, males, 0.45 mm (0.44 to 0.46) ; females, 0.54 mm; (0.52 to 0.60) ; pronotum flattened, anterior lobe longer than posterior, lateral margins rounded, a prominent transverse depression present, low median carina present on anterior lobe that does not reach anterior margin, becoming obsolete on posterior lobe, length pronotum, males, 0.76 mm (0.72 to 0.80), females, 0.95

mm (0.88 to 1.00); width pronotum, males, 0.94 mm (0.92 to 0.96); females, 1.17 mm (1.10 to 1.26); scutellum with a transverse basal depression and obsolete median carina, length males, 0.46 mm (0.44 to 0.48); females, 0.60 mm (0.56 to 0.68); abdominal connexiva only slightly developed; hemelytra reaching lateral margins (in females the connexiva is often exposed laterad of the hemelytral margins), distance apex clavus-apex corium, males, 0.81 mm (0.80 to 0.84); females, 0.97 mm (0.80 to 1.04); distance apex corium-apex abdomen, males, 0.85 mm (0.76 to 0.96); females, 1.04 mm (0.96 to 1.20); fore femora moderately incrassate armed below on distal half with three major and a number of prominent smaller spines; antennæ, length I, males, 0.52 mm (0.50 to 0.52); females, 0.56 mm (0.54 to 0.56); II, 0.37 mm (0.34 to 0.40); III, 0.37 mm (0.34 to 0.40); IV, 0.44 mm (0.42 to 0.46). Total length, males, 3.83 mm (3.60 to 3.92); females, 4.64 mm (4.24 to 4.96).

Considerable color variation exists. In the females, particularly, the pronotum often has the black areas restricted to a pair of elongate blotches on the anterior lobe near the meson and a pair of short longitudinal streaks on the posterior lobe near the humeral angles (the holotype is so marked). The portion of the anterior lobe laterad of the black blotches is often ochraceous. I have seen one female with the anterior lobe so marked and the posterior lobe black, this specimen also has a darkened second antennal segment. The fore femora are sometimes light ochraceous above and black below; an additional brown spot is often present along the apical margin of the corium midway between the apex of the clavus and the apex of the corium. Females often have the jugæ and lateral portion of the clypeus bright brown, possess a light spot on either side of the scutellum near the apex and with the venter showing the black color of males reduced to a pair of broad longitudinal vittæ that are confluent near the base with a pair of black spots near the midline just posterior to the mesal junction of the black stripes.

Deposition of type.—Stockholm Museum.

Material examined.—Type female labeled "Cap. B. Sp.," "Kimb." 5 males, 14 females. SOUTH AFRICA: Wit River Valley, Bains Kloof; Sneeuwgat Valley, Tulbagh Division; Spitzkop Meirings Poort. Specimens in South African Museum, British Museum, and author's collections.

Tribe TERRACRIINI Stål, 1872

Teracriina STÅL, Ofv. Kongl. Vet.–Akad. Forh. 7 (1872) 38–39.
Type Genus: *Teracrius* STÅL, Oefv. Vet. Ak. Forh. (1858) 317.

The members of this tribe may readily be recognized from others of the subfamily by the very short first antennal segment that never extends more than two-thirds the distance to the apex of the clypeus.

The tribe is a small one numbering at present only 22 species, but having a distribution that includes all the major zoogeographic areas of the world. From the wide distribution, sparsity of species and heterogeneity of forms it appears we are dealing with an old and somewhat relict group of insects that was once more numerous in species and even more generally distributed. Seven genera have been recognized in the tribe to the time of this paper, of these I have synonymized *Paraphlegyas* Hesse with *Opistholeptus* Bergroth and have erected a new genus for *Helonotocoris modigliani* Lethierry.

In distribution as previously noted *Stenophyella* Horvath is confined to Australia, *Paristhmius* Reuter to Madagascar, *Teracrius* to South Africa, *Cymophyes* to the Mediterranean subregion and *Phlegyas* to the Western Hemisphere. *Ophistholeptus* and *Pachyphlegyas* occur in the Ethiopian and Oriental regions. Nowhere do we find evidence of such a broad range as occurs in the genus *Pachygrontha* which has a nearly tropicolitan continental distribution.

The relationships within this tribe appear to be more obscure than is the case with the Pachygronthini as might be expected if the group is representative of a more relict fauna.

The genus *Opistholeptus* is in some respects rather generalized and may represent more nearly the ancestral condition, as illustrated by the non-tumid gular region, relatively non-declivent head, lack of brachyptery and simple gonostyli. These characters may of course be specialized conditions, but it seems somewhat more reasonable to consider them as generalized for the present. *Opistholeptus* together with *Teracrius, Paristhmius* and *Pachyphlegyas* forms a readily recognizable section of the tribe. *Cymophyes* also is related to *Opistholeptus* perhaps through the anomalous South African *O. pallidus* and possibly represents an isolated generic unit derived from what was once a continuous distribution of opistholeptuslike species from Africa across the near east and into the tropical Asiatic region.

The Western Hemisphere *Phlegyas* are quite distinctive as is *Stenophyella* from Australia.

In this tribe as in the Pachygronthini the close relationship of the Ethiopian and Oriental faunas is well illustrated as is the presence of endemic genera in the Western Hemisphere and in Australia.

Key to the genera of the tribe Teracriini Stål

1. Apex of abdomen deeply bifid, with a pair of large projecting spines; second antennal segment strongly and coarsely punctate (Australian) ..... *Stenophyella* Horv.
   Apex of abdomen evenly rounded, or if slightly emarginate, then the second antennal segment not coarsely punctate ..... 2.
2. Gular area tumidly produced, forming a broad shallow transverse depression near base of head ..... 3.
   Gular area not tumidly produced, the area near the base of head not appearing as a shallow depression, but forming a nearly smooth surface with anterior portion of the gular surface..... 5.
3. Basal labial segment reaching or very nearly reaching the base of the head (South Africa and Madagascar) ..... 6.
   Basal labial segment remote from base of head, usually reaching not more than half way to anterior margin of prosternum..... 4.
4. Dorsal surface of pronotum extending on nearly same plane as abdomen, pronotum relatively little narrowed from base to apex; head usually sharply declivent and projecting downward at an angle of 45 degrees or greater to plane of pronotum. (In specimens with head tilted making the above difficult to use, the distance from apex of corium to apex of abdomen is always as great as or greater than distance from base of pronotum to apex of corium.) (W. Hemisphere).
   Phlegyas Stål
   Pronotum sharply and strongly declivent on anterior half; strongly narrowed from base to apex; the head continued on same curvature as apical portion of pronotum; distance from base of pronotum to apex of corium one-third or more greater than distance from apex of corium to apex of abdomen. (Oriental and Ethiopian).
   Genus *Pachyphlegyas* novum
5. Length of head three-fourths or less than three-fourths length of pronotum, thickly clothed with tomentose, appressed sericeous pile; second segment of labium reaching base of head; scutellum near base with a prominent elevated transverse ridge (Ethiopian; Oriental) ..... *Opistholeptus* Bergr.
   Length of head greater than three-fourths length of pronotum; head and pronotum bearing very short, sparse scattered hairs, surface often appearing nearly glabrous; base of scutellum lacking a prominent transverse ridge (Palearctic) ..... *Cymophyes* Fieber
6. Labium extending caudad of the middle coxæ, reaching or nearly reaching the third coxæ ..... *Paristhmius* Reuter
   Labium extending caudad only a short distance beyond the front coxæ, apex remote from the middle coxæ ..... *Teracrius* Stål

Genus OPISTHOLEPTUS Bergroth, 1894

Opisthostenus REUTER, Ofv. Finska Vet. Soc. Forh. 25 (1882) 16. (Preocc.)

Ophisthostenus LETHIERRY and SEVERIN, Gen. Cat. Hemip. 2 (1894) 179.

Opistholeptus BERGROTH, Soc. Ent. Belg. Ann. 38 (1894) 547. (New name).

Phlegyas DISTANT, (Nec. Stål) Fauna Brit. India, Rhynch. 2 (1903) 39–40. (Pt.)

Paraphlegyas HESSE, So. Afr. Mus. Ann. 23 (1925) 7. (New synonymy).

Head elongate, tapering, little declivent, clypeus usually prominently produced, considerably exceeding jugæ; first antennal segment not reaching apex of clypeus, gular area smooth, not tumidly produced, basal labial segment remote from anterior margin of prosternum; pronotum somewhat wider than long, lateral margins non-carinate, dorsal surface sometimes considerably convex; apex of abdomen evenly rounded or with a very shallow, inconspicuous emargination, membrane not exceeding apex of abdomen; fore femora incrassate, armed below with 3 to 4 major spines; gonostyli usually rather lobate, lacking an apical hooklike projection (see *O. pallidus*) and possessing sensory patches along each lateral margin (Plate 4, figs. 9, 10).

Type species: *Opisthostenus ochreipennis* Reuter. Monobasic.

Type species of *Paraphlegyas* Hesse: *Paraphlegyas elegans* Hesse, by original designation.

Distribution.—Ethiopian, Oriental and Australian regions.

This genus was erected by Reuter in 1882 for *O. ochreipennis* from West Africa. The genus as here constituted consists of ten species of which two are new, one is removed from *Teracrius* (*Phlegyas burmanus* Distant) and three are placed here by the synonymizing of *Paraphlegyas* Hesse. Through the kindness of Dr. Hesse I have been able to examine a paratype of *Paraphlegyas elegans* Hesse, the type species of *Paraphlegyas*, and find it unquestionably congeneric with *O. ochreipennis* Reuter. Hesse's *Paraphlegyas pallidus* is somewhat anomalous and possesses gonostyli of a type more similar to that shown by *Teracrius, Cymophyes*, and *Stenophyella*. However, on most external characters the species approaches *Opistholeptus* very closely. I have therefore, with some hesitation, included *pallidus* in *Opistholeptus* at this time rather than erect a new genus for the reception of the species.

Zoogeographically *Opistholeptus* illustrates the oft-noted correlation between the faunas of India and Africa. It is probable that a number of new species of this genus will be found when the African fauna is more extensively collected.

Key to the species of Opistholeptus

1. Pronotum black, predominately black, or at least with a complete black longitudinal median stripe ..... 2.
   Pronotum chiefly brown, sometimes with a prominent black transverse stripe on the anterior lobe, but never with a complete black longitudinal median stripe ..... 4.
2. Apex of corium possessing a large brown color spot ..... 13.
   Apex of corium immaculate ..... 3.
3. Basal area of clavus corium suffused deeply with black; size about 5 mm or more (4.96 to 5.72); males with the greater portion of the last abdominal tergite black..... *O. ochreipennis* Reuter
   Basal area of clavus and corium uniform testaceous; size smaller, about 4.5 mm (4.00 to 4.48); males with only a narrow central black vitta on last abdominal tergite..... *O. elegans* Hesse
4. Second antennal segment longer than segment three (S. Africa). *O. pallidus* Hesse
   Third antennal segment as long as or longer than segment two..... 5.
5. Length of antennal segment three less than one-half width of head across eyes ..... 6.
   Length of antennal segment three one-half or more than one-half width of head across eyes ..... 9.
6. Distance from apex of corium to apex of abdomen equal to or shorter than distance from base of pronotum to apex of corium..... 7.
   Distance from apex of corium to apex of abdomen greater than distance from base of pronotum to apex of corium. *O. horvathi* sp. nov.
7. Pronotum with a broad black transverse band across anterior lobe of pronotum; size greater than 4.5 mm (4.60 to 4.96). *O. elegans* Hesse
   Pronotum with anterior lobe castaneous or testaceous, never marked with a transverse black vitta, size less than 4.5 mm (4.20 to 4.35) ..... 8.
8. Head strongly declivent, pronotum nearly flat across center of disc; apex of clypeus and meso-basal area of scutellum uniformity testaceous; male with apex of abdomen evenly rounded. *O. chinai* Slater
   Head only very slightly declivent nearly straight; pronotum moderately convex, apex of clypeus and meso-basal patch on scutellum black; male with apex of abdomen emarginate ..... *O. jordani* Slater
9. Apex of corium possessing a brown color spot ..... *O. burmanus* Dist.
   Apex of corium immaculate ..... 10.
10. Distance apex corium-apex abdomen more than twice distance apex clavus-apex corium (2.10 to 2.32) ..... *O. capeneri* sp. nov.
    Distance apex corium-apex abdomen less than twice distance apex clavus-apex corium (1.56 to 1.89) ..... 11.

11. Pronotum bearing a broad transverse black vitta across anterior lobe of pronotum sometimes broken up into large spots, size over 4.5 mm ..... *O. elegans* Hesse
Pronotum entirely castaneous or testaceous; smaller, size less than 4.5 mm ..... 12.
12. Males with apex of abdomen emarginate, or with length of head as great as or greater than width of head across eyes.. *O. jordani* Slater
Males with apex of badomen evenly rounded, length of head less than width of head across eyes; (females unknown)..... *O. parvus* Slater
13. Basal angle as well as apex of apical margin of corium bearing a dark brown spot, pronotum nearly flat above (Australia).
O. Vulturnus Kirkaldy
13*a*. Basal angles of apical margin of corium immaculate, only the apex with a brown spot; pronotum strongly convex and swollen (India).
O. burmanus Distant

OPISTHOLEPTUS OCHREIPENNIS (Reuter), 1882. **Plate 1, fig. 1.**

Opisthostenus ochreipennis REUTER, Oefv. Finska Vet. Soc. Forh. 25 (1882) 16–17.

Opisthostenus ochreipennis LETHIERRY and SEVERIN, Gen. Cat. Hemip. 2 (1894) 179.

Ophistoleptus ochreipennis BERGROTH, Soc. Ent. Belg. Ann. 38 (1894) 547.

General coloration black; apical portion of scutellum, hemelytra, explanate abdominal margins, lateral areas on two caudal abdominal segments, pleuron, extreme apices of middle and hind femora, all tibiæ with exception of a basal and apical band, and spines of fore femora, ochraceous; third and fourth antennal segments, apex of first segment, tarsi and labium castaneous.

Body strongly and evenly punctate, clothed with silvery, sericeous pubescence.

Head elongate, clypeus strongly produced, first antennal segment reaching only half way to apex of clypeus, length head, 0.84 mm (0.76 to 0.88), width across eyes, 0.79 mm (0.76 to 0.84); interocular space, 0.52 (0.50 to 0.54); pronotum only slightly wider than long, an easily defined collarlike apical region, and shallow somewhat obsolete transverse impression, dorsally convex and arched, lateral margin sub-sinuate, length pronotum, 1.22 mm (1.16 to 1.28); width pronotum, 1.31 mm (1.20 to 1.40); abdomen elongate and slender, only slightly wider than membrane, apical segment in males slightly emarginate at tip; hemelytra reaching caudad only to penultimate abdominal tergite, distance apex clavus apex corium, 0.87 mm (0.80 to 0.96); distance apex corium-apex abdomen, 1.91 mm (1.76 to 2.08); labium slightly exceeding anterior coxæ, second segment just reaching anterior margin of prosternum; fore

femora with three major spines, basal tarsal segment much the longest, second shortest; antennæ with segments three and four more strongly pubescent than two proximal segments and subfusiform, length I, 0.18 mm (0.18 to 0.20); II, 0.41 mm (0.40 to 0.42); III, males, 0.55 mm (0.54 to 0.56); females, 0.48 mm; IV, 0.56 mm (0.54 to 0.60). Total length, 5.26 mm (4.92 to 5.72).

Material examined.—2 males, 3 females, Ifan Yapo C. I., French West Africa. (A. Villiers). Specimens in Institut Francais d'Afrique Noire and author's collections.

Deposition of type.—Presumably in U. Helsinki collection.

Distribution.—The type was from Addah, a town on the Gold Coast, and so far as known, the species is confined in distribution to West Africa.

I have not had the opportunity of examining the type of this species, but the specimens before me fit the original description so well that I have no hesitation in assigning them to this species. There is some color variation. In the females particularly there is a tendency for the black color of the pronotum to be broken up into irregular stripes and the intervening areas to be a dull testaceous.

This is a very distinctive species and its only close ally in the genus is *O. elegans* (Hesse) from Southwest Africa. From *elegans* this species differs by its larger size, more elongate shape, more arched pronotum and characters mentioned in the key.

OPISTHOLEPTUS CAPENERI sp. nov.

General coloration ochraceous, to dull castaneous, apex of clypeus, area about antenniferous tubercles, median basal line on head, gular region, under side of first and second antennal segments, mesal spot at base of scutellum, mesal region of thoracic venter including coxæ, trochanters, and bases of femora, an interrupted stripe on abdominal sternites midway between meson and lateral margins, base of ovipositor and underside of front femora with exception of a narrow testaceous stripe in the rgeion of the bases of the femoral spines, black; head and area of calli on pronotum shading to castaneous.

Body surface densely, but comparatively weakly and inconspicuously punctate, covered very thickly with dense, sericeous pile.

Head elongate, clypeus much produced; first antennal segment not reaching more than one-half way to apex of clypeus, length

head, 0.74 mm (0.68 to 0.80); width across eyes, 0.71 mm (0.68 to 0.72); interocular space, 0.45 mm (0.42 to 0.48); pronotum elongate, strongly and evenly tapering from base to apex, dorsal surface flattened or even slightly depressed in the center, never strongly arched, transverse impression only very faintly represented, length pronotum, 1.02 mm (0.96 to 1.04); width pronotum, 1.19 mm (1.12 to 1.24); scutellum with a weak apical carina, width, 0.56 mm (0.52 to 0.60); length, 0.51 mm (0.48 to 0.52); abdomen elongate, margins explanate, particularly in female, membrane hyaline, reaching terminal abdominal segment, apex of abdomen in male weakly emarginate, in female penultimate abdominal segment with a short caudally directed projection on caudo-lateral angle, hemelytra with distance from apex clavus to apex corium, 0.73 mm (0.68 to 0.80), distance from apex corium to apex abdomen, 1.69 mm (1.60 to 1.76); fore femora armed below with three major spines, length, 0.99 mm (0.96 to 1.04); antennæ with segments three and four subfusiform, length I, 0.18 mm; II, 0.38 mm (0.36 to 0.40); III, 0.41 mm (0.40 to 0.44); IV, 0.50 mm (0.48 to 0.52). Total length, 4.88 mm (4.64 to 4.96).

Holotype.—Male, UNION OF SOUTH AFRICA: Hennops River Tol. Pretoria District, December 27, 1950. (A. L. Capener). In Transvaal Museum, Pretoria.

Paratypes.—16 males, 21 females. UNION OF SOUTH AFRICA: Rustenburg, Hennops River Tol. Specimens in British Museum, Institut Francais d'Afrique Noire, Vienna Museum, So. Australian Museum, Carnegie Museum, Chicago Natural History Museum, United States National Museum, Stockholm Museum, Hungarian National Museum, Prague Museum, J. C. Lutz, and author's collections.

I take pleasure in dedicating this interesting new species to Mr. A. L. Capener who has favored me with a great number of interesting African Hemiptera and who collected the type series of the species.

OPISTHOLEPTUS ELEGANS (Hesse), comb. nov.

Paraphlegyas elegans HESSE, So. Afr. Mus. Ann. 23 (1925) 72–73. (*Fig.*)

Paraphlegyas namakundensis HESSE, So. Afr. Mus. Ann. 23 (1925) 73–4. (*Fig.*) New Synonymy.

General coloration testaceous to dull ochraceous, marked with black as follows: a median and two lateral longitudinal stripes on pronotum, base of scutellum, head with exception of central

area between eyes, inner portion of first and all of second antennal segment, median and two lateral stripes on dorsum of abdomen, the lateral stripes terminating at anterior margin of last abdominal segment, median stripe extending to abdominal apex, broad vitta on abdominal venter midway between meson and margin, underside of femora, basal one-half of mid and hind femora and extending to near the apex of the underside and basal and apical band on tibiæ; (males often with pronotum entirely black) females usually brighter yellow with dark markings on pronotum reduced to a broad transverse fascia and interrupted lateral stripes, these markings often reduced to dark spots; apical margin of corium strongly concave and immaculate.

Head moderately declivent, clypeus well produced nearly reaching middle of second antennal segment, length head, 0.70 mm (0.64 to 0.74); interocular space, 0.43 mm (0.40 to 0.48); width of head across eyes, males, 0.71 mm (0.70 to 0.72); females, 0.77 mm (0.76 to 0.78); pronotum strongly convex, transverse impression weakly indicated, very strongly tapering cephalad in females, length, 1.02 mm (0.92 to 1.06); width pronotum, males, 1.14 mm (1.08 to 1.20); females, 1.33 mm (1.28 to 1.36); scutellum with a prominent transverse basal ridge and a weak median carina, length males, 0.48 mm (0.44 to 0.50); females, 0.59 mm (0.54 to 0.62); hemelytra with lateral corial margins weakly expanded near region of apex of scutellum, membrane extending half way onto apical abdominal tergite, distance apex clavus-apex corium, males, 0.71 mm (0.68 to 0.76); females, 0.82 mm (0.80 to 0.84)); distance apex corium-apex, abdomen, 1.40 mm (1.32 to 1.52); apex of abdomen emarginate in male, evenly rounded in females, connexivum broadly expanded somewhat concavely produced in females; fore femora moderately incrassated, armed below with three black-tipped major spines, length, 0.94 mm (0.88 to 1.00); labium reaching just caudad of front coxæ, second segment reaching anterior margin of prosternum; antennæ, length I, 0.17 mm (0.16 to 0.18); II, 0.36 mm (0.34 to 0.38); III, 0.39 mm (0.34 to 0.44); IV, 0.47 mm (0.42 to 0.52). Total length, males, 4.25 mm (4.00 to 4.48); females, 4.76 mm (4.60 to 4.96).

Deposition of type.—South African Museum.

Deposition of type.—P. namakundensis, South African Museum.

Material examined.—Paratype, male, 43 males, 21 females. UGANDA: Bussu Busoga. Oltregiuba, Bubasci, Patrizi. BEL-

GIAN CONGO: Sankuru, Bassin Lukuga Paulls, Bassin Lukuga. L. Edouard: Kamande, Ruanda: Lukuga, Ruanda: Kibungu Lulua: Sandoa, Watsa a Niangara: Rutshuru, Uele. ANGOLA: Dundo, Lunda. Specimens in Congo Museum, Museu do Dundo, British Museum, Vienna Museum, Stockholm Museum, United States National Museum, Institut Francais d'Afrique Noire, and author's collection.

In the original description Hesse did not indicate a holotype and I take this opportunity to designate as Lectotype a male specimen from the type series labeled "Namakunde, February, 1923, S. W. Africa" and bearing a red type label.

Distribution.—This species is now known from northern S. W. Africa, Angola, and the Belgian Congo.

As noted above considerable sexual dimorphism exists in the species, males being more slender, and having a much more extensively developed dark pattern on the pronotum. A male from Uele, Paulls Belgian Congo differs from the other specimens in having all but the bases of the femora light yellow instead of predominately black and appears to have a somewhat deeper transverse impression across the pronotum.

The gonostyli (Plate 4, figs. 9, 10) are typical of the genus.

I have here synonymized Hesse's *namakundensis* with his *elegans* which has page priority. After study of a considerable series from Angola it appears that *namakundensis* represents the female sex of elegans. Hesse in describing the species *elegans* had before him individuals possessing nearly completely black pronota. However, all variations of color exist in the series noted above and I have been unable to find reliable structural differences to separate the black forms from the other members of the series.

Elegans, the type species of *Paraphlegyas* Hesse, is definitely congeneric with *Opistholeptus ochreipennis* (Reuter) necessitating the placement of *Paraphlegyas* as a subjective synonym of *Opistholeptus.*

OPISTHOLEPTUS PALLIDUS (Hesse), 1925, comb. nov.

Paraphlegyas pallidus HESSE, So. Afr. Mus. Ann. 23 (1925) 75. (*Fig.*)

Entire body pale testaceous; inner side of first and second antennal segments, antenniferous tubercles, punctures in anterolateral pronotal region, mesal area of scutellum, mid and hind coxæ, inner side of fore tibiæ, a ventral line on fore

femora, gular region, a broad line running from mesopleuron to apical abdominal segment ,sternal thoracic areas and irregular longitudinal stripes on abdominal terga, black: eyes reddish; apices of tarsi castaneous.

Body strongly punctate, often with smooth areas anteriorly on pronotum, near middle of corium and laterally on head. Sparsely clothed with sericeous, decumbent pile.

Head short, blunt, with clypeus relatively little produced, first antennal segment reaching two-thirds of way to apex of clypeus, antenniferous tubercles obtuse, length head, 0.78 mm (0.68 to 0.86); width of head across eyes, male, 0.72 mm (0.72 to 0.74); female, 0.78 mm (0.76 to 0.80); interocular space male, 0.47 mm (0.46 to 0.48); female, 0.52 mm (0.52 to 0.54); pronotum flat, not at all arched, mesally even slightly depressed, transverse impression obsolete, lateral margin broadly rounded, with anterior lobe as broad as or broader than base, a smooth region usually present in area of calli; length pronotum, males, 1.04 mm (0.96 to 1.12); females, 1.20 mm (1.16 to 1.24); with pronotum, males, 1.12 mm (1.08 to 1.14); females, 1.30 mm (1.24 to 1.34); scutellum with a weak although readily evident median carina, antero-lateral angles rounded away from base of pronotum; length scutellum, males, 0.49 mm (0.48 to 0.52); females, 0.58 mm (0.56 to 0.60); abdomen very long and slender, abdominal margins explanate especially in females; apex of abdomen not emarginate in either sex, hemelytra with membrane extending caudad onto penultimate abdominal tergite; distance from apex clavus to apex corium, males, 0.84 mm (0.80 to 0.88); females, 1.00 mm (0.96 to 1.08); distance from apex corium to apex abdomen, males, 1.99 mm (1.88 to 2.12); females, 2.31 mm (2.28 to 2.40); labium just exceeding fore coxæ, second segment reaching base of head; fore femora with three major spines; basal tarsal segment longest, length, males, 1.07 mm (1.00 to 1.12); females, 1.17 mm (1.12 to 1.20); antennæ prominent, length I, 0.21 mm (0.20 to 0.24); II, 0.54 mm (0.52 to 0.56); III, 0.48 mm (0.44 to 0.52); IV, 0.58 mm (0.56 to 0.60). Total length, males, 5.40 mm (5.16 to 5.80); females, 6.42 mm (5.96 to 7.04).

Deposition of type.—South African Museum.

Material examined.—17 males, 23 females, 1 nymph: UNION OF SOUTH AFRICA: Hennops River Tol., Rustenburg, Pretoria Dist.; M'fongasi, Zululand; BELGIAN CONGO; Elizabethville,

Nyangwe, Bassin Lukuga. Specimens in British Museum, Institut Francais d'Afrique Noire, Vienna Museum, So. Australian Museum, Carnegie Museum, Congo Museum, Stockholm Museum, United States National Museum, Hungarian National Museum, Museo du Dundo, J. C. Lutz, and author's collection.

This large elongate form is not closely related to any other species of the genus. The male gonostyli (Plate 4, fig. 2) are of a type similar to that found in *Teracrius* and *Cymophyes*. However, externally the species shows the characteristics of *Opistholeptus* and I have chosen to place it here for the present.

O. pallidus was described from a single female (Hesse *in litt.*) from Waterburg, Damaraland (S. W. Africa), present records indicate a very wide range probably over most of the Ethiopian Region in favorable ecological situations.

Fifth instar nymph.—General coloration very light testaceous, prominently marked with chestnut and very dark brown on following parts: obscure median stripe on clypeus, dividing on line with apices of jugæ and continuing as a pair of thin lines to base of clypeus where it continues as a median stripe to base of head, lateral margins of head, pronotum and mesothoracic wing pads, becoming diffuse mesad, pronotum and scutellum with a narrow longitudinal line on each side of meson, a series of dashes on abdominal tergites and a second series on venter midway between meson and margin, apex of abdomen and a median stripe extending cephalad from apical blotch to midway on 6th tergite; apex of labium, mesal region of mesothorax below and a darker interrupted stripe midway between meson and lateral margin, a broad mesal patch on last four abdominal segments below, antennæ, diffused coloration on legs becoming almost black on apical tarsal segment, and spots on femora.

Body elongate and slender: head tapering evenly cephalad, clypeus broad and bluntly rounded, much exceeding jugæ, first antennal segment reaching one-half way to apex of clypeus; epicranial stem absent, length head, 0.92 mm; width across eyes, 0.72 mm; interocular space, 0.50 mm; pronotum with lateral margins straight, evenly narrowing cephalad, length pronotum, 0.76 mm; width pronotum at base, 1.04 mm; mesothoracic wing pads reaching third abdominal tergite; two dorsal scent gland openings present mesally on margin between third and fourth and fifth tergites; apex of abdomen bifid; labium not reaching caudal edge of coxæ, legs small; fore

femora moderately incrassate with 3 major spines on distal half, the two tarsal segments subequal; antennæ very stout, thick and prominent, length I, 0.18 mm; II, 0.48 mm; III, 0.42 mm; IV, 0.56 mm. Total length, 5.36 mm.

Specimen examined.—Hennops River Tol., Pretoria District, Union of South Africa (A. L. Capener). In author's collection.

OPISTHOLEPTUS BURMANUS BURMANUS (Distant), 1903, comb. nov.

Phlegyas burmanus DISTANT, Fauna Brit. India Heteropt. 2 (1903) 40. (*Fig.*)

Teracrius burmanus BREDDIN, Deutsch. Ent. Zeit. (1907) 220.

Phlegyas burmanus DISTANT, Fauna Brit. India. Rhynch. 5 (1910) Append. 43–44. (Pt.)

General coloration ochraceous; area of calli, spot at apex of corium, apical segment of tarsi, apical antennal segment, thoracic region laterad of meso- and metacoxæ and labium castaneous; clypeus, antenniferous tubercles, base of head, mesal band on first antennal segment, second and sometimes third antennal segment, elongate spot on pronotal meson between the calli, a pair of irregular, partially obliterated longitudinal stripes on each side of pronotal meson, base of scutellum mesally, irregular blotching on abdominal tergites and patches on connexivum, gular region, thoracic venter mesad including coxæ and trochanters, base of ovipositor, a broad longitudinal stripe on abdominal sternum midway between meson and lateral margin, fore femora below, inner side of fore tibiæ, basal one-fourth of mid and hind femora and extending to near apex on inner side, breaking up into widely separated spots on outer side, mid and hind tibiæ with more or less incomplete basal and pre-apical bands, black.

Body strongly and rather coarsely punctate, covered densely with sericeous pile.

Head elongate, declivent, clypeus produced and tapering to apex, first antennal segment reaching only one-half way to apex of clypeus, antenniferous tubercles prominent and acute, length head, 0.70 mm (0.68 to 0.72); width across eyes, 0.73 mm (0.72 to 0.74); interocular space, 0.44 mm; pronotum strongly convex or arched, lateral margins sub-sinuate, dorsal curvature sloping downward evenly from base to apex, transverse impression absent, median carina very obsoletely visible, incomplete, length pronotum, 1.08 mm (1.04 to 1.12); width pronotum, 1.28 mm (1.24 to 1.32); scutellum with a very weak median, apical carina, prominently tumid at base, length, 0.48

mm; abdomen slender, explanate connexivum not conspicuously visible laterad of the hemelytra, in males last abdominal segment emarginate at apex; hemelytra with membrane reaching apex of abdomen in female, onto the apical segment in male, distance apex clavus to apex corium, 0.72 mm; distance apex corium to apex abdomen, 1.12 mm; distance base pronotum to apex corium, 1.42 mm (1.36 to 1.48); labium long, extending nearly midway between fore and mid coxæ, second segment exceeding anterior margin of prosternum; fore femora armed below with three major spines, length front femora, 0.92 mm; basal tarsal segment longest; antennæ length I, 0.16 mm; II, 0.30 mm (0.28 to 0.32); III, 0.41 mm (0.40 to 0.42); IV, 0.48 mm. Total length, 4.20 mm.

Deposition of type.—British Museum.

Material examined.—3 males, 2 females: INDIA: Assam, Chabua, Doom Dooma. South India: Chikkaballapura. HAINAN ISLAND: Grove near Woh Han Chuen E. of Nodoa. Specimens in British Museum, United States National Museum, and author's collections.

This species is most closely related to *horvathi* from Africa. It may be distinguished by the less coarsely punctate pronotum, less explanate and concave abdominal connexivum and presence of apical corial spots.

Mr. R. J. Izzard of the British Museum has kindly compared the specimens from Assam with the type male and notes they appear to be structurally identical. He kindly notes the following coloration of the type: Head entirely black and thorax also black for two reddish-brown spots on the disc, the anterior femora are entirely pale on the dorsal surface, but the middle and hind femora have the basal two-thirds black.

Breddin placed *burmanus* in *Teracrius,* but it appears to agree very closely with other members of *Opistholeptus.* The variety from Ceylon described by Breddin and later synonymized by Distant has been retained here as a distinct subspecies as discussed below.

OPISTHOLEPTUS BURMANUS SINGALENSIS Bredden, 1907, comb. nov.

Teracrius burmanus var. *singalensis* BREDDIN, Deutsch. Ent. Zeit. (1907) 220.

Phlegyas burmanus DISTANT, Fauna Brit. India, Rhynch. 5 (1910). Append. 43–44. (Pt.)

General coloration testaceous; apex of clypeus, antenniferous tubercles, base of head above, area of calli, four indistinct

basal stripes on pronotum, median basal scutellar spot, gula, coxæ, trochanters, ventral surface of fore femora, basal markings on middle and hind femora, broad patch on antero-mesal portion of mesosternum, incomplete band midway between meson and lateral margin of abdominal sterna, base of female ovipositor, spots on abdominal connexiva, irregular markings on antennal segments, black; portions of antennæ, apical corial spot and labium castaneous. The males run darker, one specimen examined has the head and thorax almost completely black.

Body densely and coarsely punctate, clothed below with sericeous decumbent pile, nearly glabrous above.

Head short, moderately declivent, clypeus short, first antennal segment reaching nearly two-thirds of way to apex of clypeus, length head, 0.62 mm (0.56 to 0.64); width across eyes, 0.68 mm (0.64 to 0.72); interocular space, 0.40 mm (0.36 to 0.44); pronotum strongly arched, sloping cephalad, margins straight, transverse constriction absent, length pronotum, 0.92 mm (0.88 to 1.00); with pronotum at base, 1.17 mm (1.04 to 1.30); scutellum with a weak apical carina, length, 0.45 mm (0.40 to 0.48); hemelytra with margins sinuate, membrane almost reaching apex of abdomen, abdominal connexivum very broad and conspicuous, curving dorsad much as in *horvathi*, distance apex clavus to apex corium, 0.63 mm (0.56 to 0.72); distance apex corium to apex abdomen, 1.01 mm (0.92 to 1.08); distance base pronotum to apex corium, 1.37 mm (1.36 to 1.44); labium reaching caudal margin of front coxæ, second segment slightly exceeding anterior margin of prosternum; antennæ, length I, 0.14 mm (0.12 to 0.16); II, 0.29 mm (0.28 to 0.32); III, 0.36 mm (0.32 to 0.40); IV, 0.41 mm (0.36 to 0.44). Total length, 3.53 mm (3.32 to 3.88).

Lectotype.—Female, CEYLON: Anuradhapura (W. Horn). In Deutsches Entomologisches Institut.

Specimens examined.—3 males, 3 females. CEYLON: Anuradhapura, Puttalam, Weligama, Negombo, Colombo. The female specimens represent the syntype series. Specimens in Deutsches Entomologisches Institut, Indian Museum, and author's collection.

Breddin (1907) described the females of this small form as a variety of Distant's *burmanus*. The population is treated here as of subspecific status with the feeling that specific rank remains questionable until a more adequate series is

available for study. Distant (1910) synonymized Breddin's variety with his *burmanus,* but I am unable to agree with this conclusion. The Ceylonese specimens are definitely smaller, vary in certain proportions and seems to represent an isolated population confined to the island of Ceylon.

OPISTHOLEPTUS HORVATHI sp. nov.

General coloration dull testaceous shading to castaneous in the area of the calli, the head and antennæ; inner surface of second antennal segment, base of head above, apex of clypeus, irregular median spot in area of calli, a broad, irregular longitudinal stripe just mesad of lateral pronotal margins and a slight indication of a second longitudinal stripe between above mentioned stripe and meson, mesal spot at base of scutellum, pair of longitudinal stripes on abdominal tergum, a series of spots along abdominal sternites midway between meson and lateral margin and underside of front femora, black.

Very strongly and coarsely punctate, especially on pronotum, which is the most strongly punctate of any member of the genus examined. Clothed sparsely above, more densely below with decumbent, sericeous pile.

Head large and broad, slightly declivent, clypeus strongly projecting, blunt at apex, first antennal segment reaching one-half way to apex of clypeus, ocelli much nearer compound eyes than each other, antenniferous tubercles sub-acute, length head, 0.76 mm; width across eyes, 0.78 mm; interocular space, 0.50 mm; pronotum prominently convex or arched above, side margins straight and evenly tapering to apex, transverse impression absent, length pronotum, 1.12 mm; width pronotum, 1.36 mm; scutellum with very weak median carina, length, 0.50 mm; abdomen broad, tapering moderately to apex, connexivum greatly explanate and concavely curved, giving abdomen something of a boat, or scoop-shaped appearance when viewed from above; hemelytra with distance apex clavus to apex corium 0.80 mm; distance apex corium to apex abdomen, 1.64 mm; distance base pronotum to apex corium 1.56 mm; membrane reaching penultimate abdominal tergite; labium short, second segment just attaining anterior margin of prosternum; fore femora armed below with three light colored major spines, legs relatively small and weak, basal tarsal segment longest; antennæ, length I, 0.18 mm; II, 0.36 mm; III, 0.36 mm; IV, 0.44 mm. Total length, 4.88 mm.

Holotype.—Female, Katona, oriental Africa, Arusha-Chini. In Hungarian National Museum.

This species known from a single female is perhaps most closely related to the oriental species *burmanus,* but is easily recognized by its size, very coarsely punctate pronotum and greatly explanate abdominal connexivum, in addition to the characters mentioned in the key.

I take pleasure in dedicating this species to the late Dr. Geza Horvath one of the greatest of the students of the Hemiptera.

OPISTHOLEPTUS VULTURNUS (Kirkaldy), 1908, comb. nov.

Phlegyas vulturnus KIRKALDY, Linn. Soc. Proc. **32** (1908) 771.

General coloration testaceous; inner side of second antennal segment, ventral one-half of fore femora, basal portions below of middle and hind femora, a basal and subapical ring on tibiæ, base of head, clypeus, and median-basal area of scutellum piceous; males with almost entire pronotum black other than a testaceous longitudinal vitta on each side of mid-line terminating posteriorly near middle of pronotal disc, and occasionally with testaceous along caudo-lateral angles; apical margin of corium with an apical and basal brown spot; antero-lateral corners of abdominal tergites bearing brown spots; venter with an irregular longitudinal blackish vitta on either side midway between meson and margin.

Clothed above and below with fine, decumbent, sericeous pile; punctures on head and thorax rather small and relatively inconspicuous.

Head only moderately declivent, clypeus considerably exceeding first antennal segment, length head, 0.64 mm (0.57 to 0.71); width across eyes, 0.77 mm (0.71 to 0.81); interocular space, 0.48 mm (0.43 to 0.50); pronotum nearly flat above, sharply tapering cephalad, lateral margins nearly straight, slightly declivent, length pronotum, male, 0.85 mm; female, 0.92 to 1.06 mm; width pronotum, male, 1.15 to 1.21 mm; female, 1.28 to 1.38 mm; scutellum with a low indistinct median carina and a strongly transverse basal ridge, length, 0.45 mm (0.43 to 0.50); abdomen with connexiva strongly produced in both sexes, male with apex of abdomen emarginate; hemelytra with lateral margins expanded moderately near apex of scutellum, apical corial margin strongly concave, membrane reaching or nearly reaching apex of abdomen, distance apex clavus-apex corium 0.66 mm (0.64 to 0.71); distance apex corium-

apex abdomen, 1.27 mm (1.21 to 1.28); labium barely reaching mesosternum (?), basal segment remote from base of head; fore femora moderately incrassated, armed below with three major spines, length, 0.71 to 0.78 mm; basal tarsal segment subequal to segments two and three combined; antennæ, filiform, stout, terminal segment fusiform, length I, 0.14 mm; II, 0.33 to 0.36 mm; III, 0.33 to 0.36 mm; IV, 0.44 to 0.46 mm. Total length, male, 3.76 mm; female, 3.98 to 4.12 mm.

Deposition of type.—Unknown.

Material examined.—2 males, 3 females. Clermont, Queensland, Australia. Adelaide River. Specimens in Australian Museum (Sidney), British Museum, and author's collections.

Kirkaldy described this species from Bundaberg, Queensland. The species appears to be less closely related to *burmanus* Distant as Kirkaldy suggests, than to such West African species as *jordani* and *chinai.*

OPISTHOLEPTUS JORDANI Slater, 1953.

Ophistholeptus jordani SLATER, Beitr. Z. Ent. 3 (1953) 385–386.

"General coloration ochraceous, shining, black markings strongly contrasting as follows: apex of clypeus, antenniferous tubercles, base of head, inner half of second antennal segment, blotch on inner margin near center of first antennal segment, median basal spot on scutellum, broken median and lateral striping on abdominal tergum, the median stripe reaching the apex, ventral surface of fore femora, inner face of fore tibiæ, underside of middle and hind femora from near base to apical third, narrow basal ring on middle and hind tibiæ, gular region, thoracic venter mesally and a short narrow streak on antero-lateral margin of pronotum.

Body thickly marked with moderately fine punctures, clothed with sparse sericeous pile, nearly glabrous above.

Head moderately produced only very slightly declivent, with clypeus relatively short and blunt, first antennal segment reaching two-thirds distance to apex of clypeus, antenniferous tubercles prominent and subacute, length head .69 mm. (.64–.72), width across eyes .68 mm. (.64–.70), interocular space .42 mm. (.40–44); *pronotum* elongate, moderately arched or convex, lateral margins weakly sinuate, the transverse impression obsolete, length pronotum males 1.04 mm. females .95 mm. (.92–.96), width pronotum 1.14 mm. (1.10–1.16); *scutellum* with a weak median carina, conspicuously raised at base, length scutellum .51 mm. (.48–.52); *abdomen* very long and slender, tapering in males, broader in females, connexivum moderately explanate, male apical abdominal segment emarginate at apex; *hemelytra* with membrane reaching onto last abdominal tergite, distance apex clavus-apex corium .78 mm. (.76–84), distance apex corium-apex abdomen 1.45 mm. (1.36–1.52), distance base pronotum-apex corium 1.44 mm.; *labium* short, second segment barely attaining apical margin of prosternum; length antennal segments, I, male .18 mm.,

female .16 mm.; II, male .36 mm.; female .32 mm.; III, male .42 mm., female .32 mm.; IV, male .46 mm., female .40 mm. (.38–.42); *fore femora* armed below with three major spines, basal tarsal segment the longest. *Total length*, 4.34 mm. (4.20–4.52).

Holotye: Male, FRENCH WEST AFRICA: Tesseratu (sp?), Ifan, August 7, 1948. (A. Villiers). In Institut Francais d'Afrique Noire.

Paratypes: 3 females, FRENCH WEST AFRICA: Ifan, Dakar, Hann, 1945. (A. Villiers). In Institut Francais d'Afrique Noire. 1 female, BELGIAN CONGO; Amadi (Brousse), IV–1913 (P. Van den Plas). In Museum du Congon Belge.

This species is most closely related to *O. parvus* n. sp. and in general habitus although not in color, the male resembles *O. ochreipennis* rather closely. *Jordani* may be most easily distinguished from *parvus* by the emarginate condition of the apex of the abdomen in the male. *Parvus* is also a somewhat smaller species. (See *chinai* n. sp. for distinguishing features)."

I have quoted the original descriptions of this and the following two species in the interest of completeness.

OPISTHOLEPTUS PARVUS Slater, 1953.

Opistholeptus parvus SLATER, Beitr. Z. Ent. 3 (1953) 386–7.

"General coloration as in *jordani*, antennal segments and fore femora entirely pale yellow.

Head short, only slightly declivent, apex of clypeus blunt, length head .54 mm., width across eyes .62 mm., interocular space .36 mm.; *pronotum* moderately convex, side margins sinuate, transverse impression weakly indicated, anterior collar prominent, length pronotum .88 mm., width pronotum 1.04 mm.; *scutellum* with a low median carina and a prominent basal elevation, length scutellum .48 mm.; *hemelytra* with lateral corial margin slightly expanded in area of apex of scutellum, membrane reaching midway onto apical abdominal tergite, abdomen somewhat tapered posteriorly, the apex evenly rounded, distance apex clavus-apex corium .72 mm.; distance apex corium-apex abdomen, 1.32 mm.; *fore femora* moderately incrassate, armed below with three major spines; length fore femora .76 mm.; length antennal segments I, .14 mm.; II, .32 mm.; III, .34 mm.; IV, .42 mm. Total length 4.00 mm.

Holotype: Male, FRENCH WEST AFRICA: Bignora Casamance, V–1946 (A.V–P.D). In Institut Francais d'Afrique Noire.

This species is called to *jordani* n. sp. and differs by the evenly rounded apex to the abdomen, smaller size and relatively shorter third antennal segment."

OPISTHOLEPTUS CHINAI Stater, 1953.

Opistholeptus chinai STATER, Beitr. Z. Ent. 3 (1953) 387.

"General coloration testaceous, base of head, a narrow stripe on inner margin of second antennal segment, interrupted line on under surface of fore femora, coxæ, thoracic venter, a broken line a pair of submarginal stripes on abdominal tergites, black.

Surface densely but finely punctate; body clothed with sericeous decumbent pile, more strongly so below.

Head moderately elongate, considerably declivent for genus, clypeus bluntly rounded; first antennal segment extending one-half way to

apex of clypeus; length head .72 mm., width across eyes .68 mm., interocular space .42–.44 mm.; *pronotum* only slightly tapering from base to apex, nearly flat on dorsal surface with transverse impression very obsoletely indicated, length pronotum .92–.96 mm.; width pornotum 1.10–1.16 mm.; *scutellum* with a rather prominent carina; length scutellum .48 mm; *abdomen* relatively short and equally broad for most of length, connexivum prominently explanate, apex of abdomen in male evenly rounded, not at all emarginate; *hemelytra* with distance apex clavus-apex corium .76 mm., distance apex corium-apex abdomen 1.52 mm.; *labium* relatively long somewhat exceeding fore coxæ, second segment exceeding anterior margin of prosternum; basal tarsal segment longer than the two distal segments combined; *fore femora* with three major spines, length fore femora .84–.88 mm.; length antennal segments I, .14–.16 mm.; II, .32 mm.; III, .32 mm.; IV, .42–.44 mm. Total length 4.28–4.48 mm.

Holotype: Male, Bambey, SENEGAL: August 29, 1951 (J. Risbec.). In British Museum of Natural History.

Paratype: Female, same data as holotype (author's collection).

This species is superficially somewhat similar to *jordani* and *parvus*, but readily distinguishable by reason of the strongly declivent head, flattened dorsal surface of the pronotum and by the uniformly testaceous coloration of the apex of the clypeus and the meso-basal area of the scutellum. In addition, males may be distinguished from those of *jordani* by reason of the evenly rounded apex of the abdomen. The length of the third antennal segment is less than one-half the head width measured across the eyes in contrast to *parvus* where the third antennal segment is longer than one-half the width of the head."

Genus PARISTHMIUS Reuter, 1887

Paristhmius REUTER, Ent. Tidsk. 8 (1887) 94.
Paristhmius LETHIERRY and SEVERIN, Gen. Cat. Hemip. 2 (1894) 179.

Head moderately elongate, tapering, only slightly declivent, clypeus produced prominently beyond the jugæ, exceeding apex of first antennal segment, gular area tumidly produced as in *Terracrius*, basal labial segment reaching anterior margin of prosternum; pronotum wider than long, moderately convex, bearing a shallow transverse impression across disc midway between anterior and posterior margins, lateral margins rounded, scutellum with a median carina, basal depression and transverse carina immediately posterior to the depression; lateral margins of hemelytra sinuate, membrane reaching onto last abdominal tergite, apex of abdomen evenly rounded, fore femora very strongly incrassate, armed below with three major spines; labium long extending caudad to, or nearly to, the hind coxæ; gonostyli possessing a tapering hooklike projection (Plate 4, fig. 11), similar to *Teracrius namaquensis*.

Type species: *Paristhmius vitticolis* Reuter. Monobasic.

Distribution.—Madagascar.

This monobasic genus is very closely related to *Teracrius* through its tumid gular area, long first labial segment and male gonostyli. It may readily be separated from the latter by the much longer labium (see key to genera), deep, transverse impression across the pronotum and the considerably larger size.

Zoogeographically the restriction of this genus to Madagascar not only points up the isolated condition of this interesting island from both the Ethiopian and Oriental regions, but further strengthens the supposition that the Teracriini is composed of a relict fauna with genera tending to be restricted to a single zoogeographic region and to be composed of a small number of species.

PARISTHMIUS VITTICOLLIS Reuter, 1887.

Paristhmius vitticollis REUTER, Ent. Tidsk. 8 (1887) 95.

Paristhmius vitticollis LETHIERRY and SEVERIN, Gen. Cat. Hemip. 2 (1894) 179.

General coloration griseous, becoming light castaneous on pronotum and fore femora; head, antennæ, pronotum except for broad brown stripes on posterior portion and a pair of brown stripes near meson anteriorly, central area of scutellum, spot at apex of apical margin of corium and a second spot midway along margin, broad blotch on each segment of abdominal connexivum, for coxæ, basal and pre-apical tibial bands, terminal tarsal segment, and fore femora dark brown to piceous; thoracic pleura ochraceous strongly contrasting with color of pronotal disc; strongly punctate above and below including abdominal venter, below strongly clothed with decumbent sericeous pile, more weakly so above.

Head with first antennal segment reaching nearly two-thirds distance to apex of clypeus, length, 0.68 to 0.78 mm; width across eyes, 0.82 to 0.84 mm; interocular space, 0.48 mm; ocelli placed much closer to compound eyes than to each other; pronotum with broad apical collar, caudo-lateral margins rounded, transverse impression terminating laterad in a foveate depression, length pronotum, 1.00 to 1.12 mm; width pronotum, 1.48 to 1.56 mm; scutellum, length, 0.60 to 0.64 mm; hemelytra with apical margin of corium concave, abdomen with prominent connexivum, distance apex clavus-apex corium, 0.92 mm, distance apex corium-apex abdomen, 1.32 to 1.36 mm;

basal tarsal segment as long as two succeeding segments combined, second segment shorter than segment three; length fore femora, 1.12 to 1.28 mm; antennæ, length I, 0.20 mm; II, 0.60 to 0.64 mm; III, 0.56 to 0.60 mm; IV, 0.68 mm. Total length, 4.68 to 4.96 mm.

Deposition of type.—Presumably University of Helsinki.

Specimens examined.—Two males. MADAGASCAR: Vohémar. Amboluinanga Nord, Tananarive. Specimens in Prague Museum and Institut Scientifique Madagascar.

Genus TERACRIUS Stål, 1858

Teracrius STÅL, Ofv. Vet. Ak. Forh. (1858) 317.
Teracrius STÅL, Hemip. Afr. 2 (1865) 146.
Teracrius STÅL, Enum. Hemip. 4 (1874) 138.
Teracrius LETHIERRY and SEVERIN, Gen. Cat. Hemip. 2 (1894) 179.
Teracrius BREDDIN, Deutsch. Ent. Zeit. (1907) 219–220. (Pt.)
Teracrius HESSE, S. Afr. Mus. Ann. 23 (1925) 71.

Head short, somewhat declivent, clypeus short and blunt, first antennal segment nearly reaching apex of clypeus, second labial segment exceeding anterior margin of prosternum, basal segment reaching or nearly reaching base of head, antenniferous tubercles acute, gular area tumidly produced, much less so than in *Phlegyas,* with a shallow transverse basal impression; apical margin of corium concave, bearing a pair of dark spots; fore femora armed below with three major spines; pronotum nearly flat, only very slightly convex.

Type species: *Teracrius namaquensis* Stål, 1858. Monobasic.

Distribution:—This monotypic genus is known only from Southern Africa and Madagascar.

This genus is very similar to both *Opistholeptus* and *Pachyphlegyas* in general habitus. I have retained the genus as distinctive with some hesitation in view of certain differences, chief among which are the shape of the male gonostyli, tumid condition of the gular region, basal labial segment reaching or nearly reaching the base of the head and the lack of even curvature of the head and pronotum. This is one of the cases in which the generic concept becomes marked subjective and the question becomes one of nomenclatoral status and should not obscure the very close relationships existing between the three genera. The male gonostyli (Plate 4, fig. 1) are suggestive of *Cymophyes, Paristhmius,* and *Stenophyella.*

TERACRIUS NAMAQUENSIS Stål, 1858.

Teracrius namaquensis STÅL, Ofv. Vet. Ak. Forh. (1858) 317.
Teracrius namaquensis STÅL, Hemip. Afr. 2 (1865) 146.
Teracrius namaquensis STÅL, Enum. Hemip. 4 (1874) 138.
Teracrius namaquensis LETHIERRY and SEVERIN, Gen. Cat. Hemip. 2 (1894) 179.
Teracrius namaquensis HESSE, S. Afr. Mus. Ann. 23 (1925) 71–72.

General coloration testaceous; apex of clypeus, antenniferous tubercles, base of head, broad transverse stripe on area of calli, one or two pairs of obsolete longitudinal stripes near base of pronotum, broad median scutellar stripe, two pairs of corial spots, one pair at apex of corium, the other on apical margin midway between apex of corium, abdominal tergum usually with a pair of broad lateral stripes and narrower mesal one, the latter reaching the apex, gular area, mesal area of thorax below, a broad longitudinal stripe on either side of abdominal venter midway between meson and margin, base of male genital segment, labium, bloth on inner side of first antennal segment near center, second antennal segment above, third and fourth segments, fore femora below, basal and apical band on tibiæ, the latter often incomplete, basal portion of mid and hind femora, second and third tarsal segments black, sometimes becoming dark castaneous on distal antennal segments and labium.

Body evenly and densely punctured, clothed with decumbent, sericeous pile, above and below.

Head length, 0.54 mm (0.48 to 0.60); width across eyes, 0.61 mm (0.58 to 0.64); interocular space, 0.38 mm (0.34 to 0.44); pronotum nearly flat, little rounded, caudo-lateral angles prominently rounded, nearly globose, lateral margins rounded, length pronotum, 0.80 mm (0.74 to 0.88); width pronotum, 1.09 mm (1.04 to 1.18), scutellum with a moderate, transverse, basal ridge, and weak median carina, length, 0.44 mm (0.40 to 0.48) hemelytra with lateral margins sinuate, membrane hyaline appearing closely ridged or granulate, almost reaching apex of abdomen, the latter entire, not all emarginate, abdominal connexivum moderately explanate, distance base pronotum to apex corium, 1.34 mm (1.28 to 1.44); distance apex clavus-apex corium, 0.67 mm (0.64 to 0.72); distance apex corium-apex abdomen, 1.07 (1.00 to 1.16); labium with second segment exceeding cephalic margin of thorax; fore femora armed below with three major spines, length, 0.77 mm. (76 to 0.80); basal tarsal segment the longest; antennæ, length I, 0.16 mm (0.14

to 0.16) ; II, 0.29 mm (0.28 to 0.30) ; III, 0.28 mm; IV 0.36 mm (0.34 to 0.38). Total length, 3.49 mm (3.32 to 3.72).

Deposition of type:—Stockholm Museum.

The type is a partially mutilated female bearing the labels "N. Gami, Africae." "J. Wahlb."

Material examined.—Holotype female, 47 males, 51 females. PRETORIA: Fountains, Magaliesburg Tol., Hennops River Tol., Henley-on-Klip Tol, Irene. TRANSVAAL: Rustenburg, Kloofzicht, Johannesburg. SOUTH WEST AFRICA: Zesfontein, Hoarusib Otshu, Okahandja. UGANDA: Serere (swept off groundnuts). MADAGASCAR: Ft. Dauphin: Lebanan. Specimens in Institut Scientifique de Madagascar, British Museum, Vienna Museum, Sidney Museum, South Australian Museum, Carnegie Museum, Chicago Natural History Museum, Hungarian National Museum, Prague Museum, R. F. Hussey, H. M. Harris, J. C. Lutz, and author's collections.

There is a moderate amount of color variation in the species. The distal antennal segments are often ochraceous as is the dorsal surface of the head. The scutellum may be entirely black and the black markings on the pronotum may be extensively developed.

The species has hitherto been known only from southern Africa, but present records extend the range a great distance northward on the African continent and also to Madagascar. However, the Madagascar record from Ft. Dauphin is based on a single specimen and is from the extreme southeastern end of the island. There is a distinct possibility that this record may be based upon an introduction by commerce.

Genus PACHYPLEGYAS novum

Body short, broad, compact; pronotum strongly convex, or arched, becoming declivent on apical one-half, together with head forming a continuous arc; body including abdominal venter thickly and coarsely punctate; clypeus exceeding jugæ, head broad, slightly depressed between the eyes, ocelli placed much closer to compound eyes than to one another; scutellum broader than long, coarsely punctate, non-carinate, with a weak basal transverse ridge; clavus with two rows of punctures; corium strongly punctate with a non-punctate area on either side near center; abdomen very short, distance from base of pronotum to apex of corium greater than distance from apex of corium to apex of abdomen; membrane reaching apex of abdomen;

connexivum usually somewhat exposed in both sexes; bucculæ prominent, lobate, first labial segment very short, not reaching more than one-half distance to base of head, second labial segment reaching or nearly reaching base of head, gular area of head tumid, with a shallow basal depression just before apical margin of pronotum; head immersed in thorax to eyes; body covered with tomentose pile.

Type species: *Helonotocoris modigliani* Lethierry, 1888.

This genus is most closely related to *Phlegyas* and *Teracrius*, from these genera it may be distinguished by the strongly arched and anteriorly sloping pronotum and head and the very short abdominal region caudad of the apex of the corium, in addition to the characters mentioned in the generic key.

Distribution.—Known at present from the Philippines, Assam, Sumatra, Belgian Congo, Cameroons, and Uganda.

PACHYPHLEGYAS MODIGLIANI MODIGLIANI (Lethierry), 1888. **Plate 1, fig. 4.**

Helonotocoris modiglianii Lethierry, Mus. Civico Storia Nat. Genova Ann. 6 (1888) 463.

Phlegyas modiglianii Lethierry and Severin, Gen. Cat. Hemip. 2 (1894 179.

Teracrius modiglianii Breddin, Deutsch. Ent. Zeit. (1907) 219.

Teracrius bipunctatus Bergroth, Philip. Journ. Sci. 13 (1918) 71. New synonymy.

Color variable, testaceous to tawny-brown, corium and clavus usually lighter, pale testaceous; membrane hyaline, occasionally darker on head and base of scutellum; legs and antennæ testaceous to reddish-brown, sometimes suffused with black; black marigns sometimes present in region of calli, on corium and near base of pronotum; dorsal surface of fore femora, base of hind femora, a pair of bands on mid and hind tibiæ one near base, other three-fourths way to apex, sometimes a narrow band at apex of hind tibiæ, irregular areas at base of fore tibiæ and spots on lateral margins, basal half of abdominal tertiges, a pair of dots on caudal margin of corium one at apex the other near middle, castaneous (some of these markings becoming black in dark specimens).

Clothed with thick, appressed, sericeous pubescence.

Head forming a continuous downward curve with pronotum, length head, 0.64 mm (0.60 to 0.68); width across eyes, 0.76 mm (0.72 to 0.80); interocular space, 0.46 mm (0.44 to 0.52); pronotum, length, 0.88 mm (0.80 to 1.00); width, 1.32 mm

(1.20 to 1.48), often with a weak median carina; scutellum with weak median carina often obsolescent, somewhat convex on basal half, length, 0.50 mm (0.44 to 0.56); width, 0.67 mm (0.64 to 0.76); abdomen evenly tapering to apex, connexivum usually somewhat exposed, broadly so in females; hemelytra, strongly sinuate on lateral margins, distance apex clavus-apex corium, 0.55 mm (0.48 to 0.64); distance apex corium-apex abdomen, 0.93 mm (0.88 to 1.00); distance base pronotum-apex corium, males, 1.16 mm (1.08 to 1.24); females, 1.37 mm (1.28 to 1.48); labium reaching nearly to mesocoxæ, first segment remote from base of head; fore femora strongly incrassate, armed below with 3 to 4 major spines, interspersed minor spines and long slender silvery hairs, basal tarsal segment subequal to segments two and three combined, length fore femora, 0.84 mm (0.72 to 0.92); antennæ, short, three outer segments nearly subequal, terminal segment fusiform, length I, 0.17 mm (0.16 to 0.20); II, 0.43 mm (0.40 to 0.46); III, 0.45 mm (0.44 to 0.48); IV, 0.54 mm (0.52 to 0.56). Total length, 3.24 mm (2.96 to 3.56).

Deposition of type: The British Museum possesses a specimen from the Atkinson collection taken at Siboga, Sumatra, April, 1886 (Modigliani). This specimen is almost certainly from the type series. Lethierry notes more than one specimen being present in his original description and I take the opportunity to designate the above mentioned specimen as lectotype of *Helonotocoris modigliani* Lethierry.

Deposition of type of *Teracrius bipunctatus* Bergroth. Presumably University of Helsinki.

Material examined.—Five males, 12 females. PHILIPPINES: Luzon, Los Baños, Mt. Maquiling; Biliran Island (Baker); Negros Island, Cuernos. INDIA: Assam, Chabua. SUMATRA: Siboga.

Specimens in United States National Museum, South Australian Museum, Sidney Museum, J. C. Lutz, and author's collections.

I have assigned Bergroth's species to synonymy with little hesitation although I have not seen the type. The Philippine specimens before me vary from the original description in several details. Chief of these are that Bergroth's description indicates that the underside of the head is not tumescent. However, he does state "with a slightly curved median transverse impression," this impression it appears to me is usually

formed by the tumid condition of the ventral gular area immediately cephalad. Bergroth perhaps had in mind the term "tumid" as expressed in species of *Phlegyas* where the condition is much more pronounced. Secondly, the original description states that the first segment of the labium distinctly passes the anterior margin of the prosternum. In the specimens examined the first labial segment reaches only one-half the distance to the anterior margin of the prosternum, however, the second segment does somewhat surpass the anterior margin of the thorax. I believe that in this case Bergroth has considered the two basal segments as the first segment. Thirdly, Bergroth states that the head is less than one-half the width of the pronotum, this is true of the interocular space but is not true of the width measured across the eyes.

Distribution.—The distribution of *modigliani* is most interesting in ranging across a considerable portion of the Oriental region and as a recognizable subspecies into central Africa. This species once again illustrates the very close zoogeographic relationship between the Oriental and Ethiopian regions as illulstrated in the Pachygronthinæ.

The African subspecies described below averages somewhat larger and relatively broader across the pronotum as indicated in the following discussion.

PACHYPHLEGYAS MODIGLIANI ETHIOPICUS subsp. nov.

General coloration and punctation much as in typical *modigliani,* sometimes extensively darkened on pronotum and along posterior half of corium.

Head, length, 0.62 mm (0.60 to 0.64); width across eyes, 0.74 mm (0.68 to 0.80); interocular space, 0.47 mm (0.43 to 0.50); pronotum, length, 0.93 mm (0.88 to 1.00); width, 1.44 mm (1.30 to 1.60); scutellum, length, 0.52 mm (0.48 to 0.57); hemelytra, with distance apex clavus-apex corium, 0.57 mm (0.50 to 0.63); distance apex corium-apex abdomen, 1.03 mm (0.92 to 1.15); more femora, length, 0.88 mm (0.80 to 0.95); antennæ, length I, 0.18 mm (0.16 to 0.18); II, 0.47 mm (0.44 to 0.55); III, 0.47 mm (0.45 to 0.53); IV, 0.57 mm (0.50 to 0.60). Total length, 3.28 mm (2.96 to 3.55).

Holotype.—Male, BELGIAN CONGO: Congo da Lemba, January and February, 1913, R. Mayne. In Musée du Congo.

Paratypes.—Forty-three males, 33 females. BELGIAN CONGO: Congo da Lemba; Inongo; Mayumbe: Kiniati; Itoka; Knuzulu;

Kisantu; Kwango; Kiniati-Zobe. UGANDA: Bussu Busoga. Specimens in Musée du Congo, Stockholm Museum, United States National Museum, British Museum, J. C. Lutz, and author's collection.

This African subspecies is very closely allied to the typical *modigliani* from the Oriental region, differing in the somewhat larger size and particularly in the greater relative width of the pronotum that can best be expressed as greater than the length of the pronotum plus the interocular space. This is true of most of the Congo material and none of the Oriental specimens. Some specimens from both regions show a subequal condition of the above ratio, but the proportions run well above the conventional 75 per cent rule and the desirability of establishing a subspecific entity for this African material seems evident.

A male specimen from the Cameroons (No. 3265) in the British Museum appears to belong here, but presents some interesting color variation. Apparently this is a melanistic specimen. It differs from the type series in possessing a black pronotum, scutellum, femora, posterior half of corium and all but a narrow basal stripe of the wing membrane. This specimen has not been considered a paratype, but is placed here pending the possibility of examining a series from the Cameroons.

Genus PHLEGYAS Stål, 1865

Phlegyas STÅL, Hemip. Afr. 2 (1865) 145.
Phlegyas STÅL, Ber. Ent. Zeit. (1869) 230.
Phlegyas STÅL, Enum. Hemip. 4 (1874) 138.
Helonotus UHLER, U. S. Geol. Geog. Surv. Bull. 1 (1876) 312.
Helonotus PROVANCHER, Pet. Faune Ent. Can. 3 (1886) 71.
Peliopelta UHLER, Check List. (1886) 15.
Helonotocoris LETHIERRY, Mus. Civ. Hist. Nat. Genova Ann. ser. 2 4 (1888) 463.
Phlegyas BERG, Nova Hemip. (1892) 73.
Peliopelta DISTANT, Biol. Centr. Amer. Heter. 1 (1893) 411.
Phlegyas LETHIERRY and SEVERIN, Gen. Cat. Hemip. 2 (1894) 179.
Phlegyas DISTANT, Fauna Brit. Ind. Rhynch. 2 (1903) 39.
Phlegyas BREDDIN, Deutsch. Ent. Zeit. (1907) 220.
Phlegyas BARBER, Psyche 24 (1917) 134.
Phlegyas BLATCHEY, Heteropt. E. N. Amer. (1926) 380.
Phlegyas TORRE BUENO, Ent. Amer. 26 (1946) 52.
Phlegyas CARAYON, Comptes rendus Acad. Sci. 227 (1948) 2.

Robust, brownish species with fuscous and black markings, head broader across eyes than is anterior margin of pronotum,

declivent from plane of body, eyes small, widely separated, ocelli much nearer compound eyes than each other, clypeus exceeding jugæ, labium reaching mesocoxæ, first segment extending caudad only half way to anterior margin of prosternum; gular area strongly tumid; dorsal surface of pronotum nearly level, with long axis of body, not strongly declivent from base to apex and not forming a continuous curvature with the head; scutellum with strong basal transverse ridge and weak median carina; distance base pronotum to apex corium less than distance from apex corium to apex abdomen, connexivum usually prominently explanate, particularly in females; fore femora strongly incrassate, armed below with 2 to 3 major spines and numerous smaller ones, basal tarsal segment longer than either succeeding segment; body strongly and coarsely punctate, relatively obscurely so on ventral surface, clothed with sericeous pile.

Type species: *Phlegyas annulicrus* Stål, 1869. Monobasic: (i. e. first included species).

Distribution.—Western Hemisphere.

Seven species have been described in the genus: *abbreviatus* (Uhler), *annulicrus* Stål, *burmanus* Distant, *modigliani* (Lethierry), *patruelis* Berg, *tropicalis* (Distant), and *vulturnus* Kirkaldy. The genus as currently recognized is composed of three species and is confined in distribution to the Western Hemisphere.

Brachyptery is of very common occurrence in the various species and this results in considerable structural variation within a given species. The pronotum in brachypterous specimens is often more globose, the head less declivent and the scutellum more broadened at the apex.

Little is known of the habits of the species, but they apparently are grass feeders.

Phlegyas has no really close relatives among the Teracriini, but is perhaps most closely related to the oriental genus *Pachyphlegyas*.

Key to the species of Phlegyas

1. Caudo-lateral angles of pronotum provided with a short acute, toothlike projection (Argentina) ..... *P. patruelis* Berg
   Caudo-lateral angles of pronotum rounded and entire, never provided with a short, acute toothlike projection (N. America) ..... 2.
2. Second antennal segment twice length of segment one, ratio 2.03 (1.80 to 2.22); ratio of segment three to segment two, 1.08 (1.00 to 1.11) ..... *P. annulicrus* Stål

Second antennal segment nearly two and one-half times length of segment one, ratio 2.45 (2.40 to 2.75), ratio of antennal segment three to segment two, 1.23 (1.20 to 1.28)..... *P. abbreviatus* Uhler

PLEGYAS PATRUELIS Berg, 1884.

Phlegyas patruelis BERG, Hemip. Argent. Add. et. Emend. (1884) 54–55.

Phlegyas annulicrus BERG, Nova Hemip. (1892) 73.

Phlegyas patruelis LETHIERRY and SEVERIN, Gen. Cat. Hemip. 2 (1894) 179.

General coloration dark brown, marked with cinereous, hemelytra and apex of scutellum light tan; apical margin of corium suffused with darker; antennæ with two proximal segments light yellowish, the latter often with an irregular dark brown marking on inner face; two distal antennal segments usually darker; femora black with yellow apices; abdomen with caudo-lateral one-third to one-half of each segment dark brown to black, rest of marginal area yellowish; tibiæ yellow, front tibiæ with a prebasal and apical black ring, middle and hind tibiæ with black bases.

Body strongly punctate, clothed with sparse sericeous pile, more densely clothed ventrad.

General shape sub-depressed, head less strongly declivent than in *abbreviatus,* eyes small, in contact with anterior margin of pronotum, appearing slightly stalked, length head, 0.62 mm (0.56 to 0.68); width across eyes, 0.89 mm (0.80 to 0.96); interocular space, 0.62 mm (0.56 to 0.68); pronotum narrowing evenly from base to apex, caudo-lateral angles prominent and provided with a short sharp toothlike projection, median carina present, becoming obsolete on basal fourth, length pronotum, 0.93 mm 0.88 to 1.00); width pronotum male (macropterous), 1.12 mm; female (macropterous), 1.30 mm; scutellum with median carina at least on apical half, length, 0.40 mm (0.32 to 0.48); width, 0.50 mm (0.44 to 0.60); hemelytra with punctures on corium scattered, leaving an impunctate central area, lateral margin expanded about one-fifth distance before apex of scutellum, membrane not reaching apex of abdomen, connexivum broadly exposed and strongly explanate, especially in females, distance base pronotum to apex corium 1.20 mm (1.08 to 1.28); distance apex corium to apex abdomen; 1.35 mm (1.16 to 1.48); labium reaching mesocoxæ; fore femora incrassate, armed below, mid and hind femora somewhat swollen, much less so than fore femora, basal tarsal segment longer than either of succeeding segments; antennæ, length I, 0.19 mm (0.18 to 0.20);

II, 0.39 mm (0.36 to 0.40); III, 0.31 mm (0.28 to 0.32); IV, 0.45 mm (0.40 to 0.48). Total length, males, 3.32 mm; females, 3.98 mm (3.64 to 4.24).

In brachypterous forms the hemelytra are tremendously reduced, much more so than in any specimens of *abbreviatus* studied, their distance from base pronotum to apex corium, 0.48 mm (0.44 to 0.52); distance from apex corium to apex membrane, 0.24 mm (0.12 to 0.32); the pronotum is narrower than in macropterous specimens, width across base, 1.04 mm (1.00 to 1.08) and the pronotum is strongly convex on the dorsal surface. In brachypterous females the abdominal connexivum is greatly expanded, punctate and bears two strong ridges or longitudinal carinæ.

Deposition of type.—La Plata Museum.

Material examined.—Four males and 12 females. ARGENTINA: Santa Anna, Misiones, Chaco Fontana, Buenos Aires, Tucuman, San Isido, Reconquista; PARAGUAY: Centurion, Toldo Cue, San Luis, Puert. Fonciere. Specimens in Vienna Museum, Prague Museum, United States National Museum, Kormilev, and author's collections.

P. patruelis was synonymized by Berg in 1892 with *P. annulicrus*. The male gonostyli (Plate 4, fig. 12) are also distinct from the other two members of the genus. The hypophysis is much shorter and the basal parts of different shape.

PHLEGYAS ABBREVIATUS (Uhler), 1876.

Helonotus abbreviatus UHLER, U. S. Geol. Geog. Surv. Bull. 1 (1876) 313.

Helonotus abbreviatus UHLER, U. S. Geol. Geog. Surv. Bull. 3 (1877) 412.

Helonotus abbreviatus PROVANCHER, Pet. Faun. Ent. Can. 3 (1886) 71.

Peliopelta abbreviatus VAN DUZEE, Can. Ent. 21 (1889) 3.

Peliopelta abbreviatus SMITH, Geol. Surv. N. J. Zool. Pt. 2 (1890) 424.

Peliopelta abbreviata OSBORN, Ia. Acad. Sci. Proc. 1 (1892) 122.

Peliopelta abbreviatus UHLER, Calif. Acad. Sci. Proc. ser. 2 4 (1894) 244.

Peliopelta abbreviatus VAN DUZEE, Buf. Soc. Nat. Sci. Bull. 5 (1894) 175.

Phlegyas annulicrus LETHIERRY and SEVERIN, Gen. Cat. Hemip. 2 (1894) 179 (Pt.)

Peliopelta abbreviata BLATCHLEY, Psyche 7 (1895) 270.

Peliopelta abbreviatta MONTGOMERY, Ent. News 13 (1902) 12.

Peliopelta abbreviata MACGILLIVRAY and HOUGHTON, Ent. News 14 (1903) 263.

Phlegyas annulicrus WIRTNER, Carn. Mus. Ann. 3 (1904) 193.
Phlegyas abbreviatus VAN DUZEE, 20th Rept. N. Y. St. Ent. (1905) 549.
Phlegyas annulicrus HART, Ill. St. Lab. Nat. Hist. Bull. 7 (1907) 237, 263–4.
Phlegyas annulicrus TORRE BUENO, J. N. Y. Ent. Soc. 16 (1908) 230.
Phlegyas abbreviatus SMITH, Cat. Ins. N. J. Edn. 3 (1919) 142.
Phlegyas annulicornis (sic) BANKS, Cat. Nearct. Hemip. (1910) 60. (Pt.)
Phlegyas abbreviatus TORRE BUENO, J.N.Y. Ent. Soc. 18 (1910) 29.
Phlegyas abbreviatus VAN DUZEE, Can. Ent. 44 (1912) 319.
Phlegyas annulicrus PARSHLEY, Psyche 21 (1914) 145.
Phlegyas abbreviatus PARSHLEY, Occ. Pup. Bost. Soc. Nat. Hist. 7 (1917) 45–6.
Phlegyas (sic) *abbreviatus* DRAKE, N. Y. St. Coll. Forestry Tech. Publ. (16) 22 (1922) 63.
Phlegyas abbreviatus HUSSEY, Occ. Pap. Mus. Zool. U. Mich. 118 (1922) 21.
Phlegyas abbreviatus BARBER, St. Geol. Nat. Hist. Surv. Bull. 34 (1923) 720–1.
Phlegyas abbreviatus BLATCHLEY, Het. E. N. Amer. (1926) 381.
Phlegyas abbreviatus TORRE BUENO, Bull. Brook Ent. Soc. 21 (1926) 54.
Phlegyas annulicrus DOWNES, Ent. Soc. Brit. Col. Proc. (1927) 9.
Phlegyas abbreviatus BARBER, Corn. U. Exp. Sta. Mem. 101 (1928) 95.
Phlegyas abbreviatus HENDRICKSON, Ia. St. Coll. J. Sci. 4 (1930) 71.
Phlegyas abbreviatus JOHNSON, Pub. Nant. Maria Mitch. Assoc. 3 (1930) 26.
Phlegyas abbreviatus PROCTER, Wistar Instit. Anat. Biol. (1938) 70.
Phlegyas abbreviatus BRIMLEY, Ins. N. Carol. (1938) 68.
Phlegyas (sic) *abbreviatus* MOORE, Can. Ent. 76 (1944) 40.
Phlegyas abbreviatus PROCTER, Biol. Surv. Mt. Desert Pt. VII Insecta (1946) 72.
Phlegyas abbreviatus TORRE BUENO, Ent. Amer. 26 (1946) 53.
Phlegyas abbreviatus MOORE, Contr. Instit. Biol. U. Mont. 26 (1950) 13.
Phlegyas abbreviatus SLATER, Ia. Acad. Sci. Proc. 58 (1952) 554–556.
Phlegyas abbreviatus SLATER, Ia. Acad. Sci. Proc. 59 (1952) 531.

General coloration yellowish to castaneous; apex of clypeus, area at base of head, area of calli on pronotum, four streaks at base of pronotum that sometimes coalesce into blotches, median scutellar stripe, irregular spots or blotches along apical margin of corium, greater part of abdominal tergum, caudo-lateral angles of connexival segments, pre-basal ring on first antennal segment, basal and pre-apical band on second, all of segment three with exception of apex, coxæ, trochanters, all of femora with exception of apical ring, basal and pre-apical

ring on tibiæ, black. This species is quite variable in color, some of the black markings noted above such as the third antennal segment become castaneous in very light specimens. Macropterous individuals are generally lighter than brachypterous specimens.

Body thickly and coarsely punctate, clothed with sericeous decumbent pile, more thickly so below.

Head strongly declivent, often nearly at a right angle to longitudinal axis of body, clypeus short and broad, first antennal segment reaching two-thirds of way to apex, eyes slightly stalked, bucculæ prominent and not at all tapering from base to apex, gular area strongly tumid with a shallow basal furrow, width of head across eyes, males, 1.05 mm (1.02 to 1.08); females, 1.16 mm (1.12 to 1.18); interocular space, males, 0.66 mm (0.64 to 0.68); females, 0.75 mm (0.72 to 0.76); pronotum moderately convex, less flattened than in *annulicrus*, not at all declivent from base to apex, median carina present, sometimes obsolete near base and apex, lateral margins sinuate, length pronotum, macropterous forms, males, 1.14 mm (1.12 to 1.16); females, 1.32 mm; brachypterous forms, males, 1.07 mm (1.04 to 1.08); females, 1.24 mm; width pronotum, macropterous forms, males, 1.40 mm (1.36 to 1.44); females, 1.65 mm (1.60 to 1.68); brachypterous forms, males, 1.27 mm (1.20 to 1.32); females, 1.50 mm (1.48 to 1.52); scutellum with a weak apical carina and a strong basal transverse ridge, length scutellum macropterous forms, males, 0.64 mm; females, 0.77 mm (0.76 to 0.80); brachypterous forms, males, 0.59 mm (0.56 to 0.60); females, 0.68 mm; hemelytra, with membrane reaching or nearly reaching apex of abdomen, hemelytral margins sinuate, apical corial margin concave, distance apex clavus to apex corium macropterous forms, males, 0.48 mm; females, 0.64 mm (0.56 to 0.76); brachypterous forms, males, 0.37 mm (0.36 to 0.40); females, 0.46 mm (0.44 to 0.48); distance apex corium to apex abdomen, macropterous forms, males, 1.16 mm; females, 1.39 mm (1.32 to 1.48); brachypterous forms, males, 1.28 mm (1.24 to 1.32); females, 1.56 mm; distance base pronotum to apex corium macropterous forms, males, 1.24 mm; females, 1.49 mm (1.48 to 1.52); brachypterous forms, males, 1.00 mm (0.96 to 1.04); females, 1.26 mm (1.20 to 1.32); apex of abdomen entire, connexiva prominent, nearly flat; labium reaching mesocoxæ, second segment much exceeding apex of

prosternum; fore femora armed below with three major and numerous minor spines, length, 0.92 mm (0.84 to 1.04); antennæ, length I, 0.19 mm (0.16 to 0.20); II, 0.47 mm (0.44 to 0.50); III, 0.38 mm (0.36 to 0.40); IV, 0.52 mm (0.48 to 0.54). Total length, males, 3.63 mm (3.60 to 3.72); females, 4.34 mm (4.16 to 4.44).

Deposition of type.—United States National Museum.

Material examined.—One hundred twenty-eight males, 192 females as follows: Connecticut, Illinois, Iowa, Kentucky, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Nebraska, New York, Ohio, Ontario, Tennessee. Of 289 specimens 45, or about 15 per cent, are macropterous. Blatchley (1926) states that about one specimen out of twenty is macropterous.

Distribution.—This is very widely distributed species in the United States and apparently is most common in the northern states, although specimens also occur in the south. Literature records are available from Quebec, Ontario, Maine, New Hampshire, Massachusetts, New York, New Jersey, Pennsylvania, Maryland, D.C., Virginia, North Carolina, Georgia, Michigan, Illinois, Missouri, Nebraska, Colorado (Van Duzee, 1917); Vermont, Rhode Island, Connecticut (Parshley, 1917); Indiana, Florida (Blatchley, 1926); Iowa (Hendrickson, 1930).

P. abbreviatus is a grass feeding species, but little is known of the life history. Blatchley (1926) notes it hibernates in the adult state. Iowa chinch bug surveys have taken the species from clumps of big blue stem (*Andropogon furcatus*) in winter. The egg and the five nymphal instars were described by Slater (1952).

The male gonostyli are distinctive (Plate 4, fig. 13), but definitely indicate the much closer relationship to *annulicrus* than to *patruelis*.

This species is closely related to *annulicrus* Stål, but in addition to the characters noted in the key it differs in the less flattened pronotum, in the presence of a nearly complete median pronotal carina and in most specimens in the darker and more strongly contrasting markings. The tendency to brachyptery appears more intense here than in *annulicrus* judging from the available material. In no specimens is the reduction of the hemelytra as extreme as in the Argentine *patruelis*.

Batchley (1926) reports a melanistic specimen from Indiana in which the hemelytra were almost completely black. I have

examined a rather anomalous male from "Mexico (C. F. Baker)" in the United States National Museum collections that has the pronotum and scutellum completely black with the hemelytra testaceous. The ratio of the first to the second antennal segment is 2.7 as in *abbreviatus*, the ratio of the third segment to the second is 1.09 as in *annulicrus*. The pronotal punctures appear somewhat elliptical near the meson. While this specimen may represent a new species because of the variability within the species of this genus, and the indefinite nature of the locality data, I have hesitated to describe this specimen until more material is available. A second perplexing specimen from United States National Museum material bears the label "Port of Spain Trinidad W. I. R. J. Crew." In coloration and pronotal characteristics, this is a typical *abbreviatus*. The ratio of antennal segment one to segment two is 2.33 and of segment three to segment two, 1.17. These ratios are slightly less than the series measured, but much more representative of *abbreviatus* than of *annulicrus*. I consider this specimen as a representative specimen of *abbreviatus*. Either the latter extends in small populations considerably south of its known range, the label is incorrectly associated with this specimen or the specimen was adventitiously introduced into Trinidad by some means of transportation. I am inclined to feel one of the last two alternatives is the probable situation.

PHLEGYAS ANNULICRUS Stål, 1869.

Phlegyas annulicrus STÅL, Ber. Ent. Zeit. 13 (1869) 230.
Phlegyas annulicrus STÅL. Enum. Hemip. 4 (1874) 138. (As new).
Phlegyas annulicrus UHLER, U. S. Geol. Geog. Surv. 1 (1876) 307.
Peliopelta tropicalis DISTANT, Biol. Centr. Amer. Heter. 1 (1893) 411.
Phlegyas annulicrus LETHIERRY and SEVERIN, Gen. Cat. Hemip. 2 (1894) 179. (Pt.)
Phlegyas tropicalis LETHIERRY and SEVERIN, Gen. Cat. Hemip. 2 (1894) 179.
Plegyas annulicrus VAN DUZEE, N. Y. St. Mus. Bull. 97 (1905) 549.
Phlegyas annulicrus SNOW, Kans. Acad. Sci. Trans. 20 (1906) 178.
Phlegyas annulicornis (sic) BANKS, Cat. Nearct. Hemip. (1910) 60. (Pt.)
Phlegyas tropicalis BANKS, Cat. Nearct. Hemip. (1910) 60.
Phlegyas annulicrus VAN DUZEE, San Diego Soc. Nat. Hist. 2 (1914) 8.
Phlegyas annulicrus BARBER, Amer. Mus. Nat. Hist. Bull. 33 (1914) 511.
Phlegyas annulicrus VAN DUZEE, Calif. Acad. Sci. Proc. 12 (1923) 139.
Phlegyas annulicrus BLATCHLEY, Heteropt. E. N. Amer. (1926) 380.

Phlegyas annulicrus BRIMLEY, N. Car. Dept. Agr. Div. Ent. (1938) 68.
Phlegyas annulicrus TORRE BUENO, Entom. Amer. 26 (1946) 52.
Phlegyas tropicalis TORRE BUENO, Entom. Amer. 26 (1946) 53.
Phlegyas annulicrus BARBER, Ohio. Jour. Sci. 48 (1948) 67.
Phlegyas annulicrus BARBER, Ent. Soc. Wash. Proc. 51 (1949) 276.

General coloration testaceous; calli, caudo-lateral spots on abdominal connexiva, femora except apices, basal and subapical tibial bands, labium, a pair of spots on apical margin of corium, one at apex and one near center of margin, third and fourth antennal segments and markings on the basal segments and sterna dark ferrugineous to blackish; body covered with sericeous pile, strongly punctate.

Head immersed in thorax to eyes, the latter substylate, broader than apex of pronotum, clypeus broad to apex, length head, 0.72 mm; width across eyes, 0.99 mm (0.92 to 1.08); interocular space, 0.64 mm (0.60 to 0.68); pronotum with basal angles strongly rounded, median carina obsolete, very weakly indicated mesally, length, 1.04 mm; width, 1.28 mm; scutellum with a relatively weak basal ridge, length, 0.60 mm; hemelytra with corium strongly punctate with a narrow smooth area mesad on hemelytra, outer margin of corium narrowed midway from base of scutellum, membrane reaching apex of abdomen, distance base pronotum to apex corium, 1.36 mm; distance apex clavus to apex corium, 0.69 (0.60 to 0.76); distance apex corium to apex abdomen, 1.08 mm (0.99 to 1.13); labium not quite reaching mesocoxæ; fore femora armed with stout spines on apical half, most basal of these the longest; antennæ, length I, 0.19 mm (0.18 to 0.20); II, 0.40 mm (0.36 to 0.44); III, 0.38 mm (0.34 to 0.40); IV, 0.48 mm (0.42 to 0.52). Total length, 3.76 mm, (3.65 to 3.91).

Deposition of Type.—Stockholm Museum.

The Stockholm Museum possesses a specimen labeled "typus." This specimen is a male bearing four labels as follows, "Texas," "Belfrage," "annulicrus Stål," "typus," the last a red label apparently used by Stål to indicate his types. Stål in his original description mentions males and females and lists Texas, Carolina meridionalis and New Jersey as type localities. The opportunity is here taken to designate the above specimen as Lectotype of *P. annulicrus* Stål. I have also seen a female specimen from the Institut Royal des Sciences Naturelles de Belgique in Brussels that bears the following labels "2503," "Coll. Camille van Voixen," "Phlegyas annulicrus St. Type;

Texas (M.H.)" and lastly a pink label "type." This last appears to be a recent label. However, the specimen very likely represents part of the type series and is here considered as a paratype and has been so labeled.

Material examined.—Eleven males, 13 females, Arizona, Texas, Louisiana, Mississippi, Georgia, California. Specimens in United States National Museum, Chicago Natural History Museum, Stockholm Museum, So. Australian Museum, Iowa State College, H. M. Harris, R. L. Usinger, Eastern Illinois College, and author's collections.

Genus STENOPHYELLA Horvath, 1914

Stenophyella HORVATH, Musei Nat. Hung. Ann. 12 (1914) 636–637.
Stenophyella BERGROTH, Roy. Soc. Vict. Proc. 29 (1916) 36–37.

Elongate slender, depressed; body with scattered punctures; clypeus much exceeding jugæ, antenniferous tubercules acute, bucculæ short, lobate, not extending caudad to the base of the antennæ, compound eyes large, prominent, length of eye greater than distance from anterior margin of eye to base of antennæ (7:5), ocelli closer to compound eyes than to each other; first and second antennal segments punctate, three and four with more prominent hairs than preceding and sub-fusiform, basal segment not reaching to apex of clypeus, second segment longest; labium attaining mesosternum; pronotum slightly wider at base than median length, anterior margin narrower than width of head across eyes, caudo-lateral angles produced caudad in rounded, depressed lobes; scutellum short, equilateral with a faint median carina; corium with mesal portion impunctate, hyaline, membrane not attaining apex of abdomen; apex of abdomen bifid into two thick conical spines; fore femora incrassate, armed below with three major and a number of minor spines, femora longer than tibiæ, basal tarsal segment longer than either of succeeding segments.

Type species: *Stenophyella macreta* HORVATH, 1914. Monobasic.

The genus *Stenophyella* contains two species. The species are restricted in distribution to Australia proper. The genus is readily recognizable by the deeply bifid condition of the apex of the abdomen and the lobately produced caudo-lateral angles of the pronotum. In both species the abdominal tergum bears a pair of very prominent longitudinal black vittæ.

Key to the species of Stenophyella

1. Distance from apex of corium to apex of abdomen over one and one-half times (1.75 to 2.16) distance from apex of clavus to apex of corium; length of second antennal segment in males less than one and one-half times (1.44) length of segment three. (In females, 1.5 to 1.6 times) ..... *S. malkini* sp. nov.

   Distance from apex of corium to apex of abdomen less than one and one-half times (1.22 to 1.48) distance from apex of clavus to apex of corium; second antennal segment more than one and one-half times (1.7 to 2.0) length of segment three..... *S. macreta* Horvath

STENOPHYELLA MACRETA Horvath, 1914. Plate 1, fig. 6.

Stenophyella macreta Horvath, Musei N. at Hung. Ann. 12 (1914) 636–637.

Stenophyella sabulicola Bergroth, Roy. Soc. Vict. Proc. 29 (1916) 36–37. (New synonymy).

General coloration light testaceous; abdominal tergum marked with a pair of longitudinal black vittæ; compound eyes and ocelli bronze; meso- and meta-sternum mesad and an irregular spot behind eye, black; above strongly punctate, punctures along the midline of head, outer side of first and second antennal segments, antenniferous tubercles, mesal and lateral areas on anterior lobe of pronotum, base of scutellum mesad, and streak on venter midway between meson and lateral margin running from near anterior margin of pronotum caudad to genital segment, black; other punctures testaceous and relatively inconspicuous.

Nearly glabrous above, below with short thick pile, becoming somewhat tomentose on mesal areas of meso- and metasternum; two proximal antennal segments with very short, sparse hairs, these become more prominent on two distal segments.

Head elongate, nearly as long as pronotum (0.92 mm); width across eyes, 0.72 mm; interocular space, 0.40 mm; pronotum with margins straight, narrowing evenly from base to apex, caudo-lateral angles moderately gibbose, caudad of the hump produced posteriorly as flattened lobes, basal margin slightly convex, length of pronotum, males, 0.81 mm (0.80 to 0.84 mm); females, 0.96 mm (0.88 to 1.08 mm); width pronotum, males, 0.92 mm (0.88 to 0.96 mm); females, 1.14 mm (1.08 to 1.28 mm), lateral margins slightly convex; scutellum with cephalo-lateral angles slightly explanate and rounded away from the base of pronotum; margins of abdomen broadly explanate, or margined, membrane reaching to base of last abdominal segment, ratio of distance from apex to clavus to apex corium

compared to distance from apex corium to apex abdomen, males, 1.39 (1.27 to 1.48); females, 1.32 (1.22 to 1.45); legs short and delicately formed, hind femora extending caudad only to posterior margin of third abdominal segment; antennæ, length I, males, 0.22 mm (0.20 to 0.24); females, 0.26 mm (0.24 to 0.28); II, males, 0.69 mm (0.64 to 0.72); females, 0.80 mm (0.76 to 0.88); III, males, 0.40 mm (0.36 to 0.44); females, 0.43 mm (0.40 to 0.48); IV, males, 0.44 mm (0.40 to 0.48); females, 0.47 mm 0.44 to 0.48). Ratio of length of third to second segment, males, 1.74 (1.7 to 1.8); females, 1.86 (1.73 to 2.0). Total length, holotype, male, 5.08 mm; females, 6.68 mm (6.4 to 7.1).

Deposition of type.—Hungarian National Museum.

Material examined.—Holotype male, 28 males, 52 females. SOUTH AUSTRALIA; Adelaide, Barossa, Barton, Coward Springs, Hughes, Kangaroo Island, Melrose, Mooloolloo, Mt. Lofty Ranges, Mt. Painter (Flinders Range), Mt. Serle (Flinders Range), Murray Bridge, Myponga, Oodea, Owicandana, Pammaroo, Tapanappa near C. Jervis, Tarcoola, Wilpena Pound. QUEENSLAND: Hughendon, Townsville. NEW SOUTH WALES: Lawson, Upper Williams River. VICTORIA: Healesville, Hobson's Dam. WESTERN AUSTRALIA: Derby, Dongarra, Fortescue River, Hammersby Range. Specimens in Carnegie Museum, British Museum, Chicago Natural History Museum, Sidney Museum, Vienna Museum, Hungarian National Museum, South Australian Museum, Stockholm Museum, H. M. Harris, R. F. Hussey, J. C. Lutz, United States National Museum, and author's collections.

Distribution.—This species appears to be widely distributed in Australia, apparently extending over nearly the entire continent with the exception of the extreme northern region where it is replaced by *malkini* sp. nov.

Through the kindness of Dr. A. Soos of the Hungarian National Museum at Budapest I have been able to examine the holotype specimen.

The type specimen bears two locality labels, the first "Australia Biro 1900," the second "N. S. Wales, Mt. Victoria." I believe that this type locality refers to Mt. Victoria in South Australia not New South Wales and lies about 60 miles south of Lake Frome and east of the Flinders Range proper.

Stenophyella sabulicola described by Bergroth in 1916 is here considered to represent the female of *macreta* Horvath. The

original description agrees very well with the long series from the South Australian Museum noted above. *Sabulicola* was distinguished from *macreta* by Bergroth primarily by its larger size, by having a narrower interocular space, a keeled scutellum, a shorter labium and the corium hyaline only in its inner half. Females of *macreta* as noted above are always considerably larger and more robust than the males. The interocular space of the Horvath type is greater than twice the width of an eye (see description above), the labial length is somewhat inaccurate in Horvath's description, the scutellum is weakly keeled and the corium hyaline only on the inner half. There is little doubt that *sabulicola* Bergroth is the female of *macreta* and the name is thus synonymized above.

From habitat notes on several specimens examined the species appears to favor damp areas and I venture to suggest that it will be found to feed on sedges and rushes as do at least some other members of the subfamily.

STENOPHYELLA MALKINI sp. nov.

Mottled with black and dark testaceous; eyes red; mesal line and two lateral blotches on anterior portion of pronotum, posterior lobe of pronotum, scutellum, a pair of nearly contiguous vittæ on abdominal tergum, entire ventral surface except lateral margin and suffused mesal spots black; entire head, two proximal antennal segments, femora and tibiæ, most of pronotum and scattered areas on scutellum and clavus with prominent black punctures.

Head, length, 0.72 mm; width head across eyes, 0.66 mm; interocular space, 0.32 mm; pronotum, length, 0.78 mm; width, 0.82 mm; caudo-lateral angles much less gibbose than in *macreta,* with the posteriorly produced lobes obsolete; scutellum with a weak median carina; hemelytra with corium hyaline on inner half, ratio of distance apex clavus to apex corium compared with distance apex corium to apex abdomen, 2.16; labium barely reaching mesosternum; antennæ, length I, 0.20 mm; II, 0.52 mm; III, 0.36 mm; IV, 0.46 mm.

Holotype.—Male, Adelaide River, 70 miles, S. Darwin, Northern Australia.

United States National Museum, No. 61936. Paratypes: 2 females. NORTHERN AUSTRALIA, Groote Eylandt; QUEENSLAND, Bathhurst Head. In South Australian Museum and author's collections.

The two female specimens known of this species are much lighter than the holotype and approach *macreta* very closely in color. The shorter second antennal segment (only 0.60 mm) in a very large female from Queensland (paratype) and the proportionately greater length of the abdomen caudad of the apices of the coria are distinctive.

I take pleasure in dedicating this new species to the collector of the holotype Dr. Boros Malkin who collected many interesting Pachygronthinæ in the southwest Pacific and in Australia.

Genus CYMOPHYES Fieber, 1870

Cymophyes FIEBER, Verh. Zool. Bot. Ges. Wien. (1870) 247.
Cymophyes STÅL, Ofv. Vet. Akad Forh. 7 (1872) 47.
Cymophyes LETHIERRY and SEVERIN, Gen. Cat. Hemip. 2 (1894) 179.
Cymophyes OSHANIN, Verzeich. Paleart. Hemip. 1 (1906) 292.
Cymophyes OSHANIN, Kat. Paleart. Hemip. (1912) 31.
Cymophyes SEIDENSTUCKER, Ent. Fenn. Ann. 19 (1953) 168–174.

Head straight, not at all declivent, clypeus elongate, first antennal segment relatively long for tribe, reaching to apical one-fourth of clypeus, antenniferous tubercles evenly rounded; pronotum relatively flattened, basal margin not produced caudally laterad, transverse constriction obsolete; hemelytra with apical margin of corium straight or evenly but slightly convex, apex of abdomen entire; gular area non-tumid and lacking a transverse basal depression; antennæ short, the third segment shorter and usually more slender than the second, fourth segment fusiform; legs relatively small and weak, fore femora with only two major spines.

Type species: *Cymophyes ochroleuca* Fieber, 1870. Monobasic.

Distribution.—Mediterranean subregion.

Cymophyes is related to *Teracrius* in the form of the male gonostyli (Plate 4, fig. 3), and it agrees with *Opistholeptus* in lacking a tumid gular area, but the shape of the third antennal segment and the non-concave apical margin of the corium as well as characters mentioned in the key are distinctive.

Since the essential completion of the present paper Dr. Seidenstucker (1953) has reviewed the genus *Cymophyes* and described two new species. I have not seen specimens of these two species and therefore give translations of the original descriptions and of the specific key from Seidenstucker's work.

Seidenstucker found the male gonostyli to be of little value in specific discrimination but did find useful characters in the

shape of the genital capsule and of the antennæ, the relative width of abdominal sternites, length of rostrum and relative widths of clypeus and jugæ.

Seidenstucker reports the species to be grass feeders, usually found in sandy fields with a sparse growth of grass and frequently on saline soil along the sea coast or near salty inland seas. He also notes the protective resemblance of individuals to grass glumes.

Key to the species of Cymophyes

[Translated from Seidenstucker, 1953]

1. Body elongate, spindle-shaped, 4.4 times (male) or at least 3.75 times (female) longer than broad. Head horizontally extended, longer than the head width across the eyes, above flatly arched slightly sloping from vertex to apex. Clypeus seen from the side lower than the jugæ. Antennal tubercle almost as long as the eye. Second antennal segment thicker than the proximal portion of the fore tibiæ. Rostrum extending between the fore coxæ, first segment not extending to the middle of the head, second segment ending considerably before the thoracic margin. Incision of the male genital segment slender, V-shaped. Length, 4.7 (males)—5.3 (females) mm ..... *C. ochroleuca* Fieber

   Body elongate oval or elliptical, less than 4 times (male), the females at the most 3.5 times longer than broad. Head sloping, as long as broad or shorter. Antennal tubercle shorter than the eye length. Clypeus seen from the side broader than the jugæ. Second antennal more slender than the proximal portion of the fore tibiæ. Rostrum, at the very least, extending to the end of the front coxæ, first segment reaching to the middle of the head, second segment extending onto the prosternum. Incision of the male genital segment broad or U-shaped. Length under 4 mm (male) or under 5 mm (female) ..... 2.

2. Rostrum little exceeding the end of the fore coxæ. Anal-notch in the male, V-shaped ..... *C. golodnajana*

   Rostrum longer, reaching at least to the mesothorax. Anal-notch of the male, U-shaped ..... 3.

3. Head shorter than broad. Rostrum surpassing the middle of the mesosternum. Abdominal segment VII of the male only twice as broad as the preceding segment. Genital capsule laterally with obliquely cut off posterior margin. Ground color whitish-yellow. Length, 3.3 (male)—3.7 (female) mm..... *C. essabchana*

   Head as long as broad. Rostrum reaching only to the middle of the mesosternum. Abdominal segment VII in the male three times as broad as the preceding segment. Side margins of the genital capsule cut off straight behind. Ground color pale ocher-yellow. Length, 3.9 (male)—4.4 (female) mm..... *C. decolor* Stål

CYMOPHYES OCHROLEUCA Fieber. 1870.

Cymophyes ochroleuca FIEBER, Verh. Zool. Bot. Ges. Wien. (1870) 248.
Cymophyes decolor PUTON, Paleart. Hemip. Cat. (1886) 24.
Cymophyes ochroleuca LETHIERRY and SEVERIN, Gen. Cat. Hemip. 2 (1894) 179.
Cymophyes ochroleuca PUTON, Cat. Paleart. Hemip. 4th edit. (1899) 29.
Cymophyes ochroleuca OSHANIN,* Verzeich. Paleart. Hemip. 3 (1910) 105.
Cymophyes ochroleuca OSHANIN, Verzeich. Paleart. Hemip. 3 (1910) 105.
Cymophyes ochroleuca OSHANIN, Kat. Paleart. Hemip. (1912) 31.
Cymophyes ochroleuca KIRITSHENKO, Musee Caucase Mem. ser. A (6) (1918) 87.
Cymophyes ochroleuca KIRITSHENKO, Trud. Zool. Instit. 8 (1938) 101, 109.
Cymophyes ochroleuca LINDBERG, Comment. Biol. 10 (1948) 67–8.
Cymophyes ochroleuca KIRITSHENKO, Verl. D.Akad. D. Wissenschaft. (1951) 275.
Cymophyes ochroleuca SEIDENSTUCKER, Ent. Fenn. Ann. 19 (1953) 168–174.

General coloration light testaceous; base of scutellum, irregular dash on apical margin of corium midway between apex of clavus and apex of corium, three longitudinal stripes on abdominal tergum, the median reaching the apex of abdomen, thoracic and scutellar punctures, base of head and median areas of thorax below, a diffused interrupted stripe along abdominal venter and thoracic pleuron midway between meson and margin and a series of comma-shaped spots on abdomen in region of longitudinal stripe, dark brown to black.

Coarsely and densely punctured above and below, abdominal venter impunctate; clothed with sericeous pile, sometimes appearing nearly glabrous.

Head elongate, clypeus bluntly produced, antenniferous tubercles blunt and rounded, not at all acute, eyes small barely exceeding apical margin of pronotum, length of head, 0.71 mm (0.62 to 0.76); width across eyes, 0.62 mm (0.56 to 0.66); interocular space, 0.39 mm (0.34 to 0.40); pronotum slightly convex in region of calli, length, 0.85 mm (0.74 to 0.88); width at base, male, 0.92 mm (0.84 to 0.96); female, 1.06 mm (1.02 to 1.10); scutellum with a prominent median carina, often

* Oshanin lists references by himself in 1891 and by Jakovlev (1880–1881) in Russian. These papers have not been available to me and are not included in the synonymy.

accentuated by a bordering row of deep, closely set punctures, length male, 0.37 mm (0.36 to 0.40); female, 0.46 mm (0.44 to 0.48); hemelytra with lateral margins moderately sinuate, the central vein prominently carinate, distance apex clavus-apex corium, 0.85 mm (0.80 to 0.88); distance apex corium-apex abdomen, males, 1.20 mm (1.16 to 1.28); females, 1.45 mm (1.36 to 1.56); membrane reaching base of last abdominal segment, apical abdominal segment evenly rounded at apex, connexivum strongly explanate; labium not reaching caudal margin of front coxæ, second segment not attaining apex of thorax; antennæ short length I, 0.21 mm (0.20 to 0.22); II, 0.35 mm (0.32 to 0.36); III, 0.24 mm (0.20 to 0.26); IV, 0.33 mm (0.32 to 0.36). Fore femora armed below with two major spines, length, 0.66 mm (0.60 to 0.68). Total length, males, 4.09 mm (3.84 to 4.24); females, 4.74 mm (4.56 to 4.88).

Deposition of type.—Vienna Museum.

Material examined.—Type male, Naxos, Greece: 3 males, 5 females: Akrotiri Bay, Limmassol, Cyprus I.; Attica, Greece. Specimens in Institut Royal des Sciences Naturelles de Belgique, Vienna Museum, J. C. Lutz, and author's collections.

Distribution.—This species is apparently confined to the eastern Mediterranean area of the Palearctic region. Oshanin (1906) reports records from Greece, Caucasus, Turkestan, and middle Russia. Lindberg (1948) reports the species from Cyprus I. Kiritshenko (1918, 1938, 1951) from various places in southern Russia and the Caucasus, Seidenstucker (1953) from Syria, Corfu, and Turkey.

CYMOPHYES DECOLOR Stål, 1872.

Cymophyes decolor Stål, Ofv. Vet. Akad. Forh. 7 (1872) 47.
Cymophyes decolor Lethierry and Puton, Soc. Ent. Fr. Ann. 6 (1876) 17.
Cymophyes decolor Puton, Paleart, Hemip. Cat. (1886) 24.
Cymophyes decolor Lethierry and Severin, Gen. Cat. Hemip. 2 (1894) 179.
Cymophyes decolor Puton, Paleart. Hemip. Cat. 4th edit. (1899) 29.
Cymophyes decolor Oshanin, Verzeich. Paleart. Hemip. 1 (1906) 293
Cymophyes decolor Oshanin, Paleart. Hemip. Kat. (1912) 31.
Cymophyes decolor Seidenstucker, Ent. Fenn. Ann. 19 (1953) 168–174.

Pale straw-yellow, apical antennal segment somewhat infuscated, no dark basal scutellar markings or longitudinal ventral abdominal stripes.

Structurally very similar to *ochroleuca;* pronotum relatively much broader, ratio of length to width pronotum, 1.37; lateral pronotal margins evenly rounding; head length, 0.72 mm; width across eyes, 0.62 mm; interocular space, 0.38 mm; length pronotum, 0.76 mm; width, 1.04 mm; hemelytra with distance apex clavus-apex corium, 0.92 mm; distance apex corium-apex membrane, 1.04 mm; membrane exceeding apex of abdomen; scutellum, length, 0.42 mm; fore femora length, 0.60 mm; antennæ, length I, 0.20 mm; II, 0.36 mm; III, 0.26 mm; IV, 0.34 mm. Total length, 4.08 mm.

Deposition of type.—Possibly Paris Museum.

Material examined.—A single female from Egypt (Vienna Museum, Signoret collection).

Distribution.—This species was originally described from Biskra, Algeria and apparently is distributed along the north African coast. The type should be in the Lethierry collection, but the Paris material has not been available to me for study.

Decolor is closely related to *ochroleuca* but in addition to the characters given in Seidenstucker's key may readily be distinguished by the lack of black markings at the base of the scutellum, a proportionately wider pronotum (ratio of length to width is 1.37, in *ochroleuca* females this ratio is 1.09 to 1.14, in the males, 1.16 to 1.25). Of great importance appears to be the distance from the apex of the corium to the apex of the membrane which is much shorter relatively than is the case with *ochroleuca.* In the present species the ratio of the above distances to that from apex of clavus to apex of corium is 1.13, in *ochroleuca* females the ratio is 1.55 to 1.90, while in the males it is 1.32 to 1.60.

CYMOPHYES GOLODNAJANA Seidenstucker, 1953.

Cymophyes golodnajana SEIDENSTUCKER, Ent. Fenn. Ann. 19 (1953) 168–174.

(Original description translated from Seidenstucker):

Sexes very dissimilar. Male small, slender and parallel sides, 3.8 times as long as broad; female broadly elliptical, 3–3.4 times as long as broad, one-fifth larger than the male. Head sloping, as long as broad (43:43). Antennal tubercle shorter than the eye length (9:14). Antennal segment one 9 times as long as the head. Segments slender, second segment more slender than the proximal portion of the fore tibiae, one-third more slender than segment one and 6 times as long as thick. Proportional lengths I:II:III:IV. equal 14:24:16:23 (male) or 15:26:17:24: (female). Rostrum only slightly exceeding the fore coxae, segment one

reaching to the middle of the head, segment two onto the anterior margin of the thorax. Hemelytra broad and long, covering almost the entire abdomen and with broadly rounded apex to the membrane, seldom somewhat reduced in females. End of abdomen in female bluntly convergent or at least with a right angled tip. Abdomen of male slender, segment VII with straight sides, at the base only 2 times as broad as the preceding segment. Proportional length of the abdominal sternites V:VI:VII in the center, male 17:9:26, of sternites IV:V:VI of the female 18:8.5; 2. Genital capsule (male) large, 0.45 mm. broad, little narrower than long (30:33), with wide V–shaped incision. Length male 3.8 mm., female 4.9 mm. Breadth male 1.0 mm., female 1.5 mm.
Holotype: male and paratypes 4 males, 5 females in J. Sahlberg collection (Turku) from the Hunger-seppe (Golodnaja) easterly from Balchach-see (Dasakstan).

CYMOPHYES ESSABCHANA Seidenstucker, 1953.

Cymophyes essabchana SEIDENSTUCKER, Ent. Fenn. Ann. 19 (1953) 168–174.

(Original description translated from Seidenstucker):

Body size slight; form in both sexes little different, elliptical 3.5 times (male) or 3.1 times (female) as long as broad. Ground color whitish-yellow. Head sloping, seen from above shorter than broad (35:40). Antennal tubercle shorter than the eye length. Antennæ slender, all segments weakly clavate, one-third more slender at base than at the apex; segment two in the middle one-third more slender than segment one, more slender than the front tibiæ, almost 7 times as long as the middle diameter. Proportional lengths I:II:III:IV. male and female 13: 20.5: 14:22 (23). Rostrum very long, a little exceeding the middle of the mesosternum; segment I extending to the middle of the head, segment II projecting considerably onto the prosternum. Hemelytra long, covering the entire abdomen; apex of membrane broadly rounded. Female abdomen converging at a right angle at apex, in the male narrow. Segment VII with straight sides and at the base only 2 times as broad as the preceding segment. Proportional length of abdominal sternites V:VI:VII in the middle in the male 12:8:25, sternites IV:V:VI in the female 14:5.5: 1. Genital capsule (male) small, width 0.33 mm., somewhat longer than broad (25:22) with broad U–shaped incision. Length male 3.3 mm., female 3.7 mm. width male 0.9, female 1.2 mm.
Holotype: male and paratype (female) in the J. Sahlberg collection, Turku. I found the species in eastern Syria from Haleb (Aleppo) at Dschebbul village on the shore of the salt sea Es-Sabcha.

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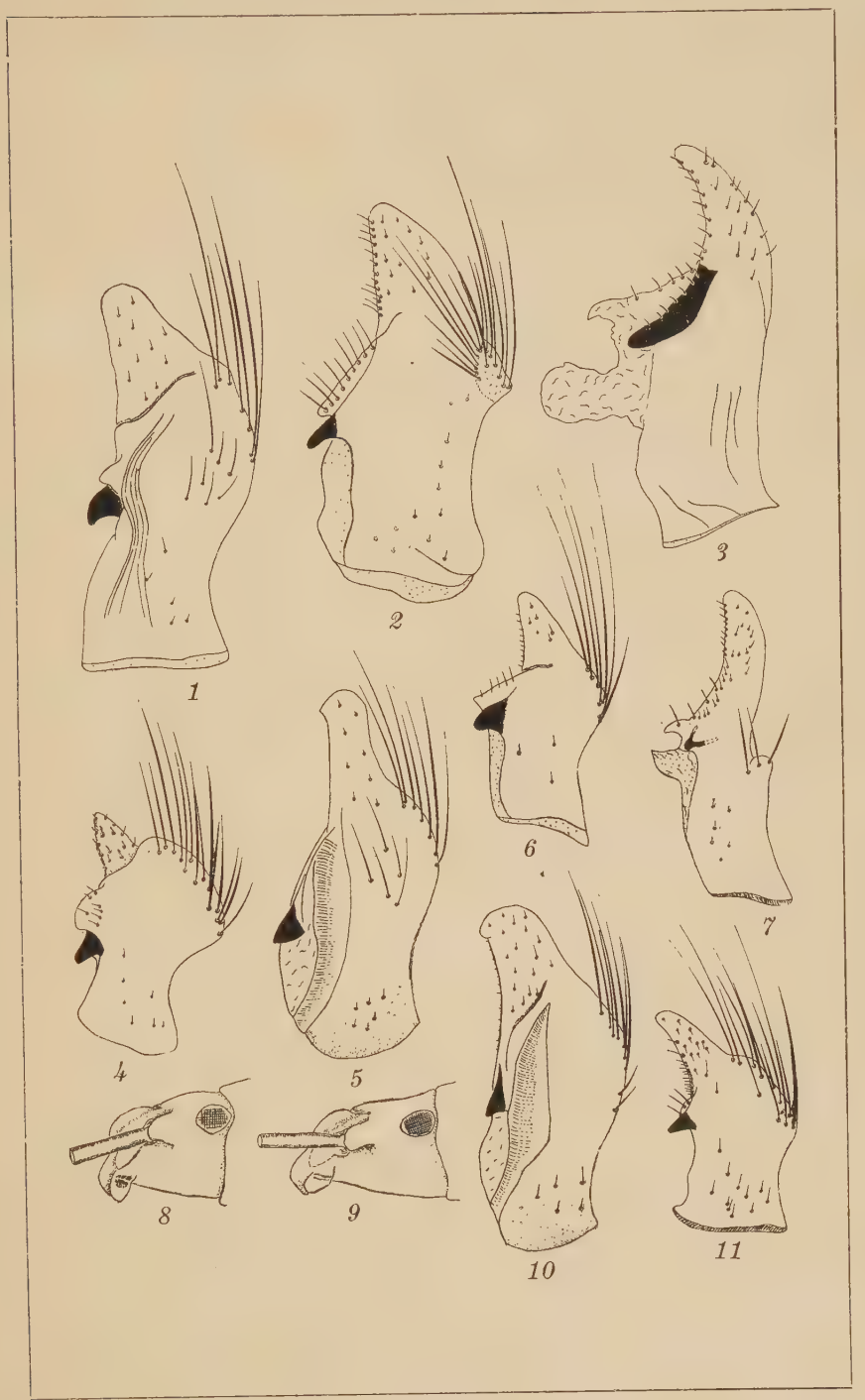

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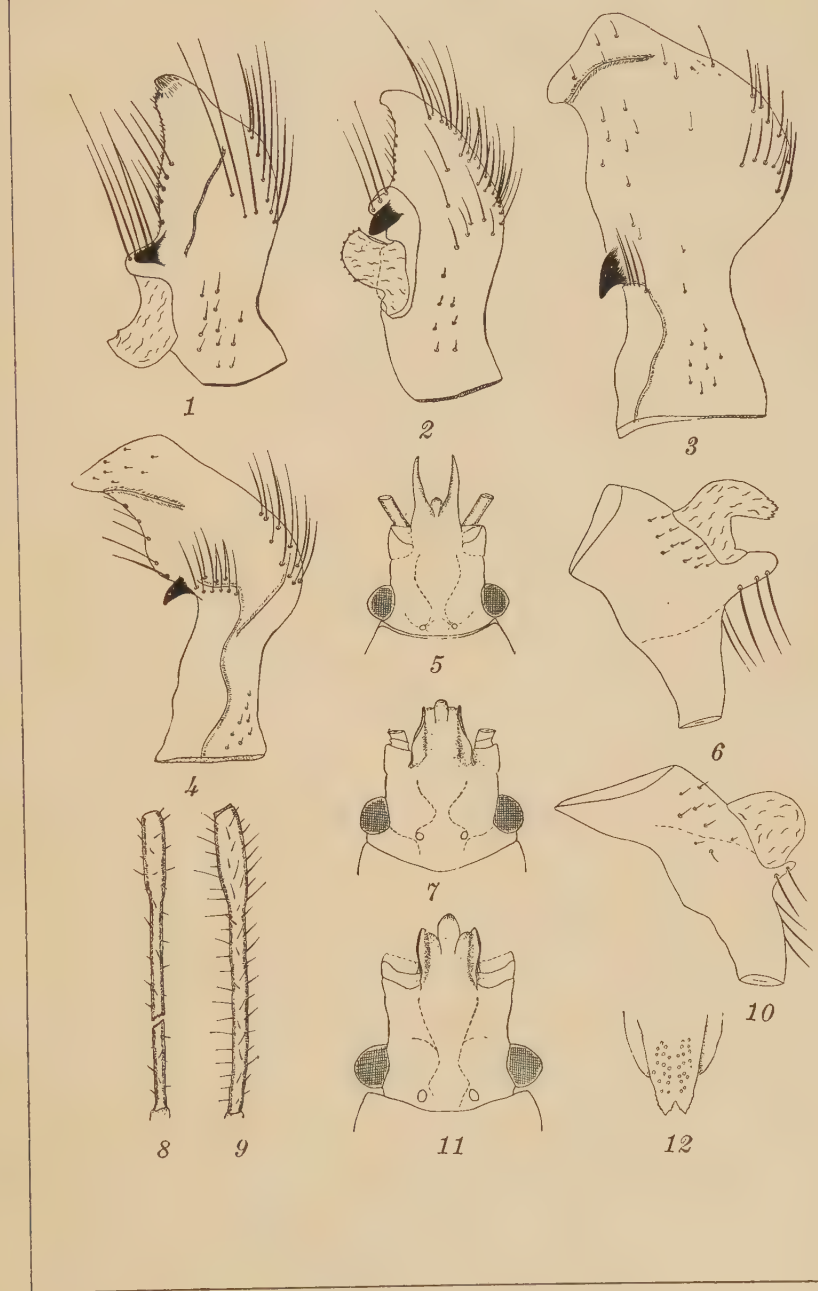

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